CANADIAN GEOGRAPHICAL JOURNAL

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1943

VOL. XXVII
No. 4

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CANADIAN GEOGRAPHICAL JOURNAL

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Editor – *Gordon M. Dallyn*

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The articles in this Journal are indexed in the *Reader's Guide to Periodical Literature* and the *Canadian Periodical Index* which may be found in any public library.

The British standard of spelling is adopted substantially as used by the Dominion Government and taught in most Canadian schools, the precise authority being the Oxford Dictionary as edited in 1936.

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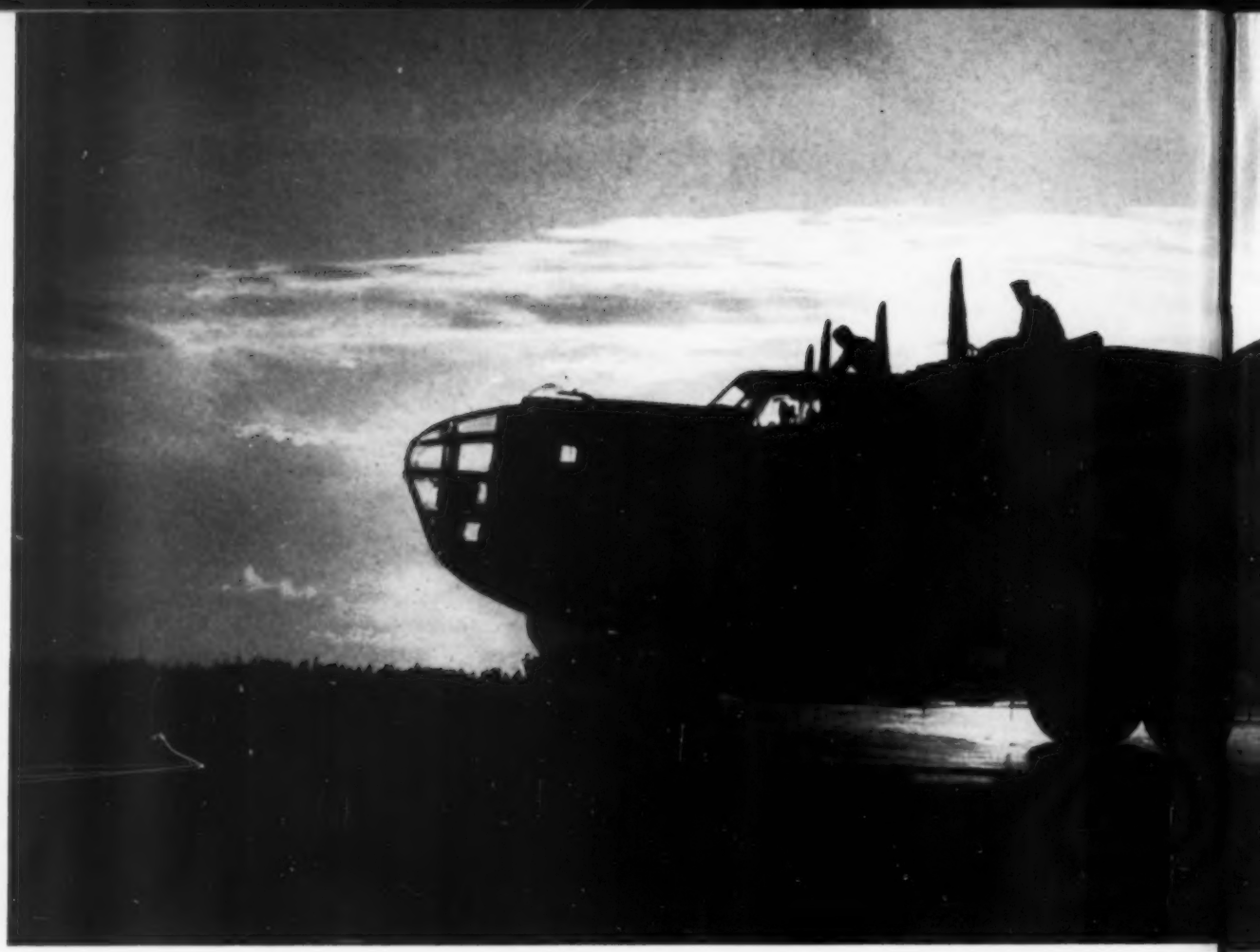

In giant four-motored Liberator bombers, R.C.A.F. crews guard priceless convo

"HOME WAR"

The R.C.A.F. Guards our Shores

by **L. M. McKechnie, in collaboration with Flying Officers N. A. Folland and S. P. Cromie**

A TALL, lantern-jawed young flight lieutenant strode into the R.C.A.F. "North Atlantic squadron" interrogation room, tossed his gear on a table and turned toward the intelligence officer. A broad grin exposed even white teeth under a close-trimmed black moustache.

"What a picnic!"

The words were spoken as they might have been by the half-back as he galloped into the locker room from his team's victory over a hated rival.

But Flight Lieutenant Johnny Martin's "picnic" had been held hundreds of miles out over the North Atlantic as, within a few minutes, he piloted his giant Liberator into two duels with Nazi U-boats. Upon the first, Martin and his crew loosed their cargo of depth charges. The second, belching deadly flak from its deck gun, was engaged with machine-gun fire.

On the same day, and the day following, others of the squadron enjoyed a "picnic". In the 48 hours — two days of a running fight with a German Wolf Pack preying on a convoy — aircraft of the North Atlantic squadron launched a total of six attacks on U-boats. They were cheated of certain knowledge of their success because it is the exception when damage to

rd price convoys of men and materials as they crawl across the broad Atlantic.

a U-boat from aerial attack can be accurately assessed. But they had the satisfaction of knowing that they had spoiled that pack's little game and that they had run telling interference in those middle wastes of the Atlantic where not so long ago the U-boats operated with little to fear from the air.

And they had their "picnic". Any action, any chance for a blow at the enemy is a "picnic" for that force of eager young men whose greatest virtue must be patience, and who usually have more to fear from the elements or from boredom than from their Nazi enemies.

These men of the North Atlantic squadron and thousands of their like serving on stations which dot both of Canada's coasts, compose what the Royal Canadian Air Force calls its "Home War Establishment".

They are the guardians of our ramparts — the men who must bury their envy of comrades who fight on far battlefronts while they plod back and forth on aerial "sentry-go" before this Dominion's gateways. These are the men, too, who help mightily in getting their comrades safely to the battlefronts along with the food and the tools to maintain their fight.

This is no plea for recognition of "unsung heroes". It is intended simply as a report on one aspect of the operations of the R.C.A.F. in this war. And if the report refers, as it does now, to long, wearying hours of monotonous patrol through horrible weather; to burial for long periods on remote and desolate stations in the wilderness, it is not because these men want sympathy.

"It's all in a day's work" they say. And they tackle that day's work with keenness and alacrity which would do credit to a top-notch fighter station in Britain.

In giant four-motored Liberator bombers, R.C.A.F. crews guard priceless

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The navigator in a patrol aircraft charts the course which must bring them over their convoy on the dot and probably far out at sea.

"Picnics", like Johnny Martin's are the infrequent reward of hundreds of hours of patient, eye-straining search.

But it would be foolish to suggest that there is one of them who would not prefer a more active theatre of war. When they gather around the radio in the mess for the news and they listen to the devastating blows Hamburg receives, there is a far-away look in their eyes.

In some cases, that far-away look means that they are visualizing the Hamburg raid in the light of intimate knowledge of such operations. For the "Home War Establishment" is well leavened with veterans of overseas operations—some of them, in fact, veterans of the Battle of Britain. Many hundreds of them have completed "tours of ops" and have returned to Canada to be posted to "H.W.E." units. Many of them wear ribbons. At least two have won the D.S.O. — an award won by only 10 members of the R.C.A.F. in this war. There are dozens with the D.F.C. or the D.F.M. They have had their "picnic", but, nevertheless, they are eager for another opportunity to strike.

For those others — those who have gone directly from the training schools of the British Commonwealth Air Training Plan — that far-away look includes no shadow of hopelessness. Their chance may come, probably is coming, for it is the policy of the R.C.A.F. to post aircrew from home war units to more active theatres gradually but as quickly as is possible without impairing the efficiency of a force which has been solidly built as an integral part of the western hemispheric defences.

It is well to recall that, in this war, the Royal Canadian Air Force has had a triple task — three closely-interlocking but none the less distinct spheres of activity. It undertook the organization, physical construction and administration of the British Commonwealth Air Training Plan.

Sea air whets appetites. During a long anti-submarine patrol members of the crew take turns visiting the galley for a warm meal.

It has provided a fighting force abroad to search out and destroy the enemy as close as possible to his own fireside. And finally, of course, there rested upon the R.C.A.F. the responsibility for the aerial protection of Canada's own soil and the seas off Canadian shores.

It should be remembered, too, that at the outbreak of war the R.C.A.F. numbered fewer than 5,000 officers and men. With hostilities as apparently remote from this continent as they were at that time, it is understandable that the whole emphasis should be thrown upon the Air Training Plan with the purpose of accomplishing, as quickly as possible, the provision of an overseas force.

It cannot be said that the "H.W.E." was ignored nor, perhaps, was it even neglected, for the appearance of U-boats in our front yard quickly pointed to the necessity of reconnaissance squadrons. But "H.W.E." certainly was not, during its infancy, pampered in the provision of either men or equipment.

It grew, however, sturdily.

Under the terms of the agreement by which the Air Training Plan was established, it was provided that Canada might draw a proportion of the graduates to meet her home defence requirements. Veterans of the permanent peace-time R.C.A.F. with the addition of a few "bush pilots" laid a solid basis of experience — particularly on the East Coast where the threat was greatest — for the newly learned competence of graduates of the Plan. The manpower problem was gradually solved, but the problem of the provision of equipment remained.

In the beginning they were flying almost anything which would carry makeshift anti-submarine bombs. They had the veteran Stranraer's at first, and a few Wapitis and Northrop Deltas. Early in 1940 they

got Hudsons and then Dighbys (some of them are still in service, and at least one squadron commander still swears by them). When it became possible to get Catalinas and Cansos, the "B.R." lads first started to carry depth charges. As quickly as possible they were given what could be bought or borrowed, but it was not until last spring that the long range Liberators capable of ensuring continuous protection for convoys across the entire Atlantic, made their appearance on the East Coast.

Development of new units, new stations and new bases was spurred, of course, by the U-boat menace. When the *Bismark* made its dash demonstrating the possibility of attack from ship-based aircraft, there was a further stiffening of fighter strength on the East Coast. Then, with Pearl Harbour, came the necessity of strengthening the Pacific Coast defences.

In the spring of 1942, Air Minister Power told the House of Commons:

"This work (the work of H.W.E.) has become increasingly important as the enemy comes closer and closer to our shores on the Atlantic Coast and is a greater menace on the Pacific . . . If we had been faced this time last year with the situation with which we now are faced to-day, we would have been almost helpless . . . Fortunately we have a large number of trained pilots. We have more aircraft — not sufficient by any means — than we had, and our construction development of defensive aerodromes has progressed to a great degree."

A year later the Minister told the House: "The year 1943 is expected to see a very pronounced increase in U-boat activity in the west Atlantic. To meet this menace the R.C.A.F. anticipates an overall increase of nearly 100 per cent increase in aircraft, aircrew and hours flown."

In 1942 the H.W.E. carried out upwards of 1,900 patrols flying some 25,980 hours.

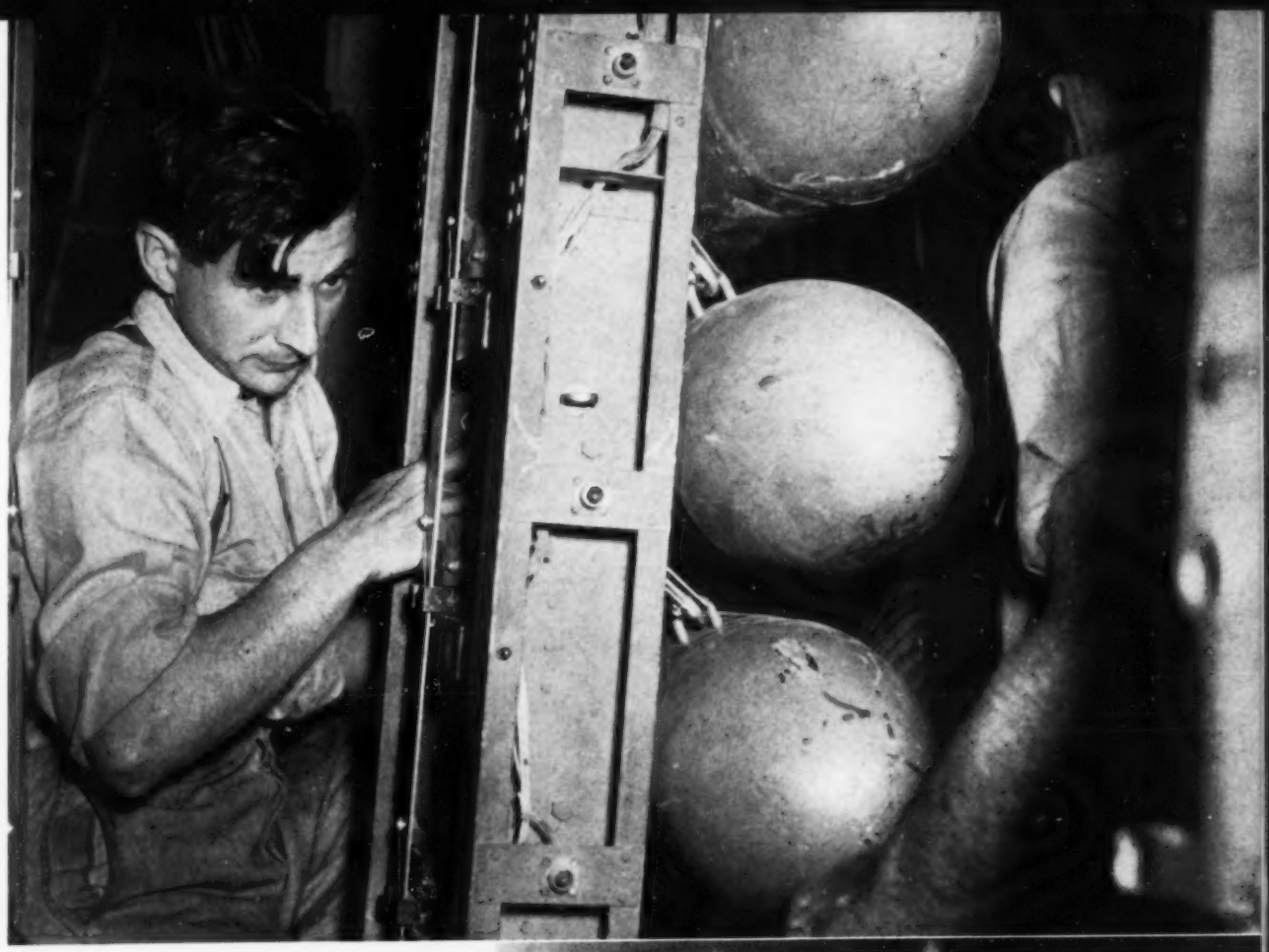
It is expected that the Minister will be able to confirm his forecast.

Thus the R.C.A.F. has built, apart entirely from the vast training organization and the substantial contribution to the war in the air overseas, a home force of very considerable stature — probably bigger, more effective and better equipped than that of any other nation near its size.

Its direction, like all other aspects of R.C.A.F. activity, comes under the general supervision of the Chief of the Air Staff, Air Marshal L. S. Breadner, C.B., D.S.C. But more directly, the "H.W.E." is the responsibility of the member of the Air Council who is known as Air Member for Air Staff. Air Vice-Marshal N. R. Anderson, who holds that post, in effect commands Canada's home air defence force — lays its plans, directs its operations, presses for its supply and equipment requirements, manages its vast signals' system by which rapid communication must be maintained with the most remote outposts, and, finally, serves as Canada's air representative on the Joint Defence Board to ensure the utmost co-operaton with United States aerial forces.

But Canada's geography demands a division of command in the field, and for that reason operations of the H.W.E. are divided by the creation of Eastern and Western "Air Commands". There is, of course, for each Command a Commanding Officer who is entirely responsible for the operations in his area in co-operation with the Navy and Army. In Eastern Air Command, Air Vice-Marshal G. O. Johnson, former Deputy Chief of the Air Staff, is Air Officer Commanding-in-Chief. The "in-Chief" is added to his title because he is not only responsible for the usual operations within his Command but directs the entire aerial protection of convoys in the Canadian Northwest Atlantic. On the West Coast, Air Vice-Marshal L. F. Stevenson is the Air Officer Commanding. Prior to his appointment to this post, he was Air Officer Commanding the R.C.A.F. Overseas. In each Command there is a great operations' room where the "situation" is constantly maintained on vast wall charts so that the hour-to-hour position of every surface vessel and every aircraft is available at a glance. In each of these rooms a chart provides instant information on the disposition of the entire air force in the Command — the number of aircraft available and in what areas, the operations on which aircraft are engaged, and, on another board, the

Too much credit cannot be given to the men of the R.C.A.F. whose role is essential yet seldom heralded. They are the men of the ground crew whose skill keeps the aircraft flying, the machine guns firing. Their proven ability to do the job right is reflected in the confidence of aircrew in their machines and armament. Above, R.C.A.F. aero-engine mechanics carefully overhaul an aircraft motor under the supervision of a flight sergeant. Right, armourers put the sting into a fighting aircraft as they thread in an ammunition belt.



Hours of preparation precede the long patrols that every day and night wing out over the Atlantic on ceaseless vigil. Upper left, ground crewmen swarm over a huge Liberator, fuelling her large and hungry gasoline tanks and checking her four powerful motors down to the last cotter pin. Lower left, bomb armourers with apparent nonchalance check over the Lib's lethal load before they stow it in her belly. Above, armourers cautiously sling the deadly "eggs" in their rack, ready to drop on a U-boat at the flip of a button. Right, what happens when several hundred pounds of H. E. — high explosive — go off under water; but the deadliest effect is not the beautiful "blossom" — it is the crushing concussion of the under water explosion that collapses a U-Boat hull like an egg shell.

Back from a "flip" over the ocean, this R.C.A.F. navigator's knobby shillelagh is a prized memento of a trans-Atlantic patrol to Northern Ireland.

Below:—A Liberator crew and their flying togs are toted out to their aircraft on a handy little "mule", the tractor of all trades on R.C.A.F. stations.

exact movements of every aircraft in the air.

These operations' rooms, then, are the nerve centres of a single force which is both defensive and offensive. The "H.W.E." is not merely a "watch and ward" organization. It combines the functions of the R.A.F.'s Coastal Command with those home air defences, such as fighter and bomber activities which have constantly to be maintained. And while the "watch and ward" lads remain at the alert, the offensive squadrons roam the wide wastes of water hunting submarines.

Convoy protection, particularly on the East Coast, has become a major activity of the "H.W.E." The "B.R." — bomber reconnaissance squadrons — have logged many thousands of hours, first in their own little area in the "front yard" and then farther and farther into the Atlantic until last spring, when, with big four-motored Liberators, the mid-Atlantic gap was closed.

At last it seemed that the U-boat menace might not only be "contained but overcome". In the central areas of the North Atlantic, land-based aircraft from America meeting aircraft from the British Isles and Iceland could at least keep the U-boats beneath the surface and blast them if they came above.

Destroying U-boats is, of course, secondary to the big job of getting the convoy through safely. The toll taken of U-boats is not, therefore, the measure of the effectiveness of aircraft protection. The principal advantage of the U-boats which operate in packs is their surface speed which gives them a good margin over slow-moving convoys. It enables the wolves, with their superior speed, to concentrate on a convoy from distant cruising areas.

But submerged, a U-boat is capable of only from eight to ten knots, and, even at that speed, its storage batteries are quickly discharged. Therefore, once driven down, the U-boat must reduce speed drastically in order to conserve its batteries against the possibility that it may have to stay down for a long time.

It is the job of the "B.R." aircraft, then, to drive the subs down and keep them down. If they happen to catch one surfaced—then it's a "picnic".

The recent gala "picnic" in which aircraft of one V.L.R. squadron chalked up six attacks in two days was exceptional — probably unique. The R.C.A.F. operating from Canadian East Coast bases have scored only about 60 such attacks since the war began. There have been many more "sightings", but the U-boats ducked before the aircraft were within range for an attack.

Depth charges are the principal weapons of attack on the submarine, but the gunners generally manage to loose at least a few rounds at the U-boat as their plane roars in to drop its "cans". Sometimes the Nazis — as all six did in the recent fight — remain on the surface to fight back. The fact that those six all fought back may mean that the Germans are making a last desperate effort to win the battle of the Atlantic supply lines.

But it is doubtful if, in their desperation, they can ever become a match for the dogged, patient determination of these lads whose hunting ground is the whole broad North Atlantic.

Canada's "H.W.E." is no longer confined to its own "front yard". Shepherding a convoy to mid-Atlantic, passing responsibility over to an aircraft from Britain and then flying on to land at a British base is not an uncommon occurrence.

Group Captain Clare Annis, a veteran sub-hunter who scored the "H.W.E.'s" first attack on a U-boat, and who, until his recent appointment to command an East Coast Station, was commanding officer of a V.L.R. unit, forecast to-day's situation when he said some time ago, "We won't be satisfied until the boys don't remember whether they left their laundry at their home base, in Iceland, or in the United Kingdom".

This new phase in the anti-submarine warfare was unofficially inaugurated last July by Flying Officer William M. Howes of Toronto and his crew. They were briefed to give coverage to a convoy to mid-Atlantic and then, on completion of patrol, to put in to base in Iceland. There they would await an assignment to give protection to a westbound convoy. But weather and radio interference intervened, and, when they were about over what they call "torpedo junction", they received orders to proceed to Iceland. Sixteen hours and 26 minutes after leaving their home base, they reported afterward, they could "smell roses". They became the first R.C.A.F. airmen to cross the Atlantic on an operational sortie.

The aircraft, of course, "worked" on the way home so that their "base and return" sortie totalled approximately 10,200 miles accomplished in a little more than 60 hours.

There is not the tenseness, the danger nor the culminating satisfaction to this arduous work that there is in bombing German targets. But there is a thrill in it nevertheless. The lads who fly these trips may yearn for more action but their yearning never extends to missing a chance to fly. The commanding officers and the adjutants have trouble keeping peace when one crew gets more sorties than another.

If much has been said here of the anti-U-boat operations, it is because they constitute the major activity of the "H.W.E." But that does not mean that other units are not as alert and as active in their spheres. There are the "fighter boys", for instance. They are the lads who go about with the "browned off" air. They are the lads who crave action and are least likely to get it.

The fighter squadrons along both coasts are essential to defence. And the essence of their job is alertness. Do not be deceived, therefore, by their indifferent air, their bored "we are not amused" attitude. They yearn too, of course. They yearn for a sky full of Messerschmitts. But there is nothing dreamy about them when they "scramble".

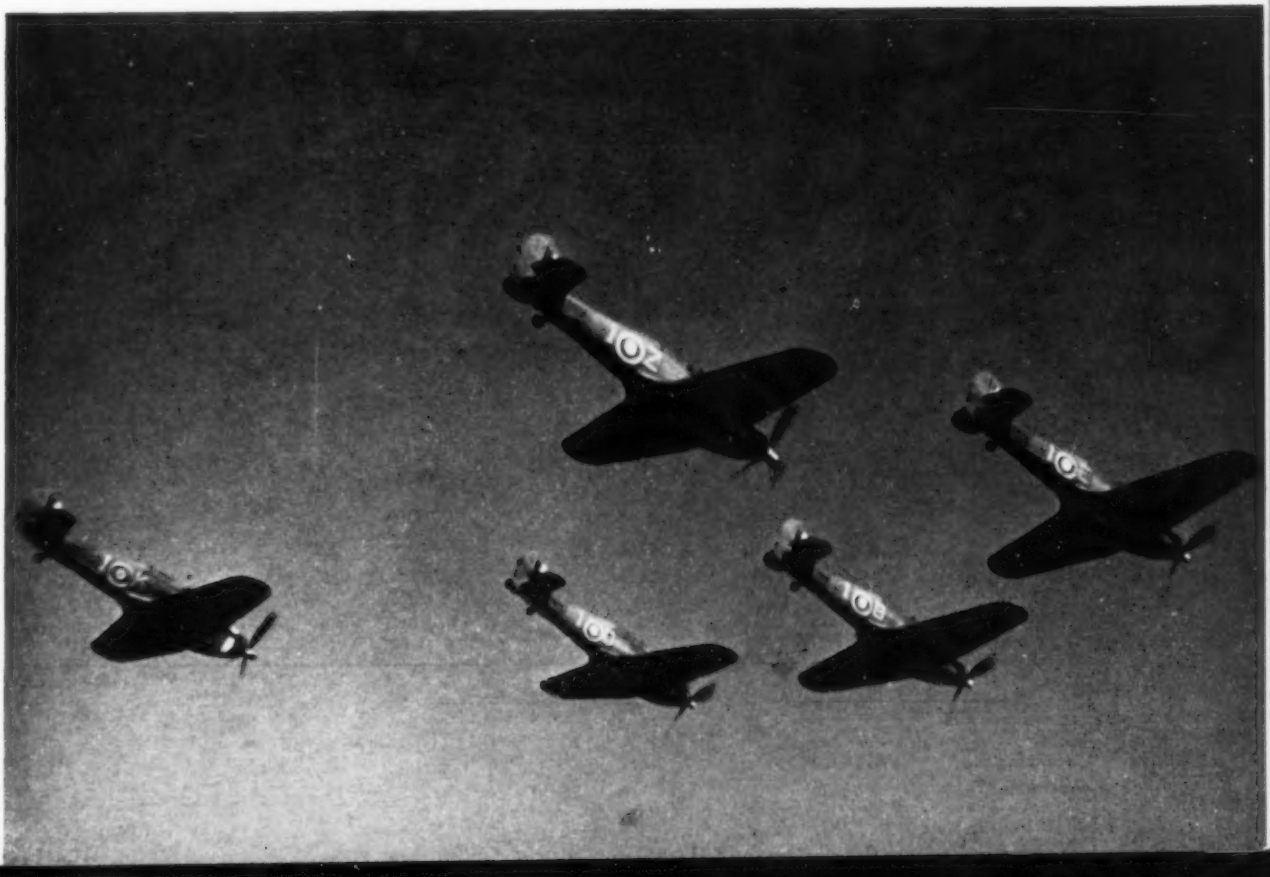
Whatever the day-to-day duties of the fighter squadrons, certain of the flights are always on 24-hour duty at the dispersal bays. The pilots and ground crews, during their tours of duty, sleep and eat at the readiness huts just behind the dispersal pits and away from the rest of the squadron. At irregular intervals during the 24-hour stretch they get the order to "scramble". It is never a practice "scramble". It is always the real thing for these lads never know whether an enemy is overhead or not.

Upper left:—After an operation the Intelligence Officer interrogates a crew on their return to base from a long patrol over the Atlantic. Lower left:—Neither weather nor isolation affect the spirit of these men of an R.C.A.F. East Coast squadron whose C.O., Group Captain Larry Wray, A.F.C., may be seen in the left foreground. Above:—Group Captain Clare Annis, C.B.E. (third from right) and his "Lib" crew, on their return from a patrol that took them to Ireland where they landed and refuelled before returning. Left to right:—F/L Johnny Martin, Winnipeg, 2nd pilot F/L D. B. Ward, Toronto, squadron wireless officer; F/O G. R. Craddock, D.F.C., Toronto, squadron gunnery leader; F/L M.S. Layton, D.S.O., Montreal, squadron navigation leader; G/C Annis, now commanding officer of a Liberator station; F/O M.M. Smith, Stoney Creek, Ontario, squadron bomb leader, and P/O E. C. Skowby, Stratford, Ontario, squadron signals leader. Right:—The air gunner of a Canso takes aboard a pair of machine guns to mount in his "blister", before taking off on patrol.

Pictures tell the story of a sub attack in black and white, and navigators, like F/L "Deacon" Irving (above), sometimes risk their necks for a good shot. Irving's air gunner saved him by grabbing him as he leaned far out of the blister of his Canso to get a photo of a sub.

From the 'midship gun blister of the Canso, below, the air gunner commands a wide sweep with his twin machine guns. There are two pair in the blister.

R.C.A.F. fighter squadrons in Canada are constantly in readiness to meet the enemy. These are Hurricane fighters, seen flying in tight, precise formations over the coast they guard.



A Canso wings its way over ice floes, heading out for a long and arduous patrol — it may be more than twen hour
and roomy hull fit her admirably for an sub

Typical of the weather and country of the rugged West Coast. Low lying fog shrouds hundreds of little islands, guarded jealously by keen-eyed patrol crews, ever on the alert for signs of enemy activity.

than twen hours before her hull touches water again. The Canso is a Canadian-built patrol bomber whose long range
oly for an sub work, at which she is a veteran.

Hurricane fighters on the line at an R.C.A.F. Pacific Coast station. Their gas tanks are full, their guns loaded, ready to take to the sky on a moment's notice. There are no practice "scrambles" with fighter pilots — every call to action is regarded as the real thing.

Fair weather or foul, the crews go out on their patrols. In a blinding rain storm and under the brilliant glare of a portable searchlight, a crew comes in from a long stretch in the air in their Canso, at a West Coast air base.

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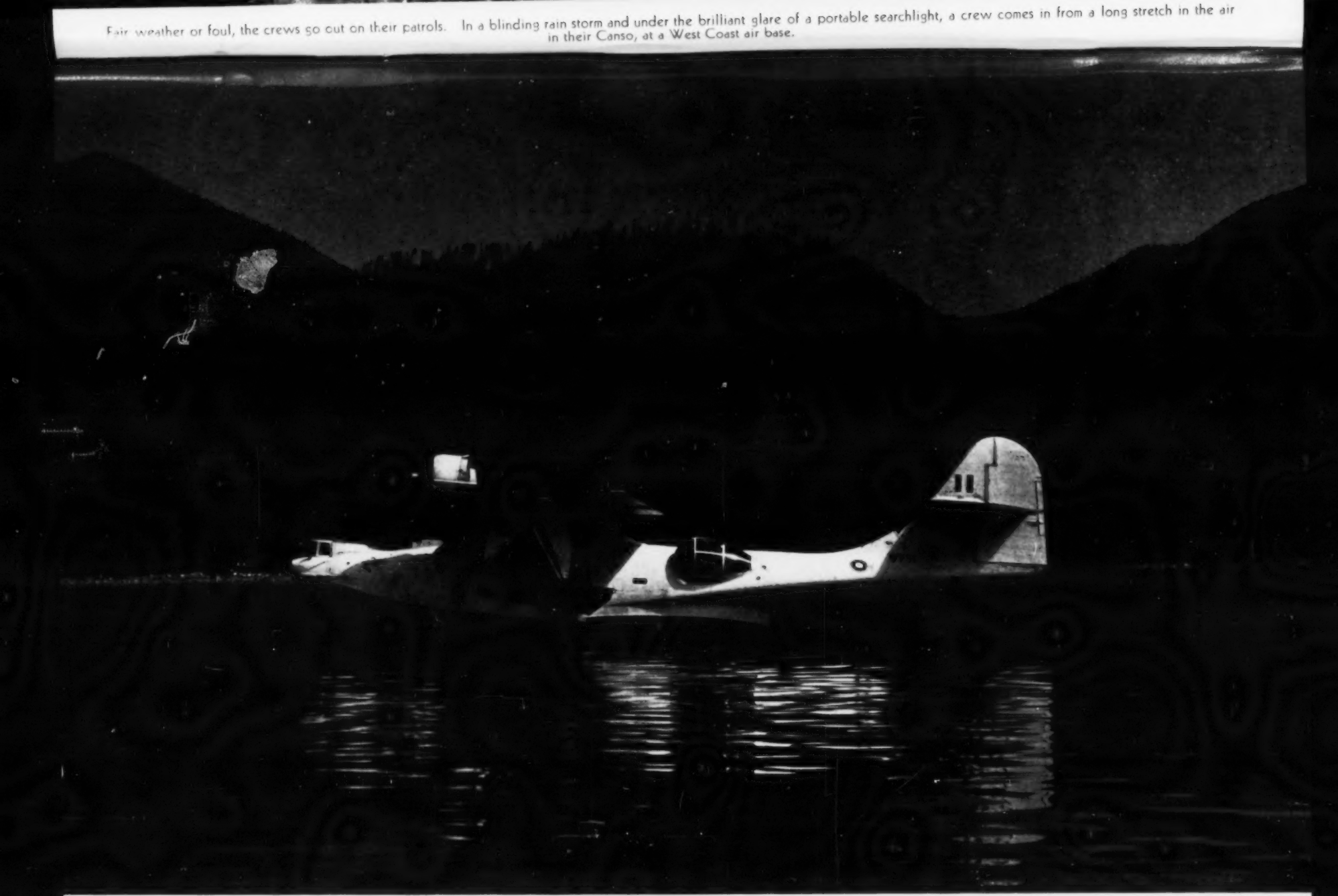


War seems remote from this peaceful scene on the West Coast. But within a few minutes this Canso was off to ensure the serenity of its setting.

"Scramble!" One word flashed over the loud speaker in dispersal huts sends these eager pilots running for their Hurricane fighters. Warmed up, they are ready for take-off, and in a matter of minutes will be in the air. This fighter is "parked" in its protective revettment.

They never pause even to look. Their job is to get into the air—but fast. And they do.

There are thousands of others too, in this "H.W.E.", doing their day's work as earnestly and thoroughly as if they were in the front line. There are the men of the transport squadrons who fly through all kinds of weather to keep remote bases supplied; there are the men of the marine section who operate a miniature R.C.A.F. "navy" and who have accomplished dozens of daring sea rescues; there are the radio men buried for months on end at desolate outposts; there are the members of the Women's Division, the administrative personnel, the bands, and those who work in the cookhouses and the laundries; and, above all, the aircrew will tell you, there are the ground crews.

When an aircraft makes a 10,000-mile operational sortie—as F/O Howes did—without a single mechanical failure—that is the work of the ground crew.

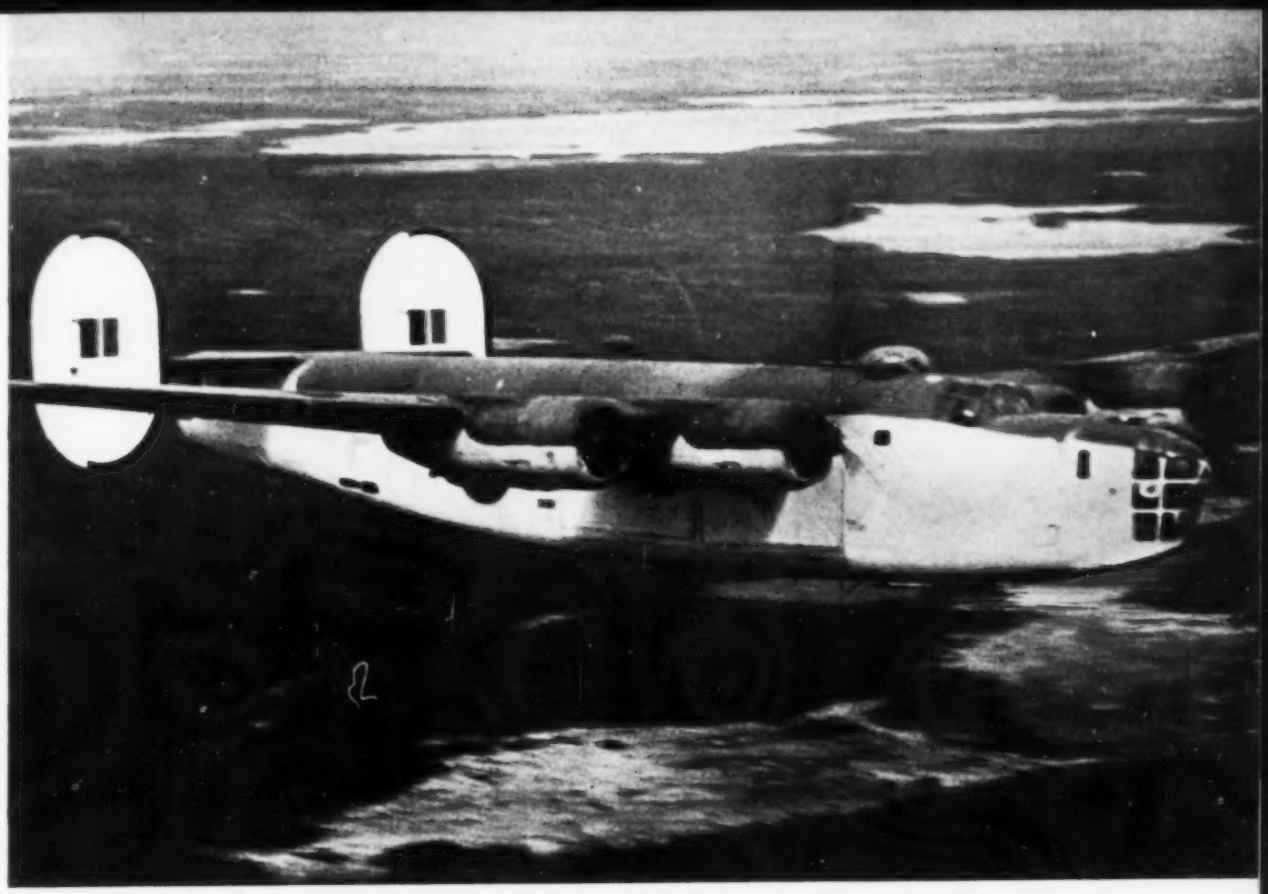
Recently, when a Liberator returned to base with a motor disabled by a U-boat's flak, the lads of the ground crew were out on the apron, peering into the gathering dusk, listening to the tell-tale irregularity in the pulse of their aircraft.

It was hardly down when a sergeant mechanic said, "It's the port inner engine".

"Gosh . . . my motor" said a mechanic beside him . . . That is again the work of the ground crew.

The story of Western Air Command is a story in itself. It is a story of a fight with the elements and nature, a story of a fight against great distances and the physical obstacles of rough country, rather than a fight against a shooting enemy. But it is the story of a successful fight which certainly helped in large measure to keep the enemy from the East away from our Pacific shores.

Indented by thousands of tiny bays, dotted by as many little islands, the 800 odd miles of Canada's west coast-line, almost entirely uninhabited, is nature at its toughest. But worse still, the day



"Sub buster". The four-motored Liberator bomber, seen here over a barren stretch on the East Coast, has proven a deadly weapon against the U-boat.

after Pearl Harbour came the full realization that "peaceful" Jap fishermen knew every inch of that coast-line. A major share of ensuring that the Japanese did not take advantage of that knowledge was assigned to the R.C.A.F. They were caught woefully weak with a few seaplane bases, a couple of elementary training school fields and a base under construction on the west coast of Vancouver Island.

But the situation was quickly changed. A fighter squadron from the East moved its entire personnel, aircraft and equipment in record time. Reconnaissance aircraft drawn from every possible source were rushed to fill the gap and immediately the tremendous task of carving aerodromes out of the wilderness was commenced. Coupled with this job was the equal difficulty of establishing communications. Radio could be intercepted and it had to be augmented by landlines strung through forests and over mountains.

At isolated spots up and down the coast, aerodromes were hacked out of the forest and blasted out of the rock. Giant bulldozers, laboriously brought in by sea, crashed through the tangled undergrowth. Mammoth concrete mixers were built on the spot from timber cut from the aerodrome site.

And out on the lonely little islands, warning posts were erected where men remained cut off from civilization for months at a time in order to be ready to flash the word of any stealthy approach by the enemy.

At stragetic points control units were built, and, through them, the nerves of this whole organization lead to one of the finest operations' rooms in the world at Western Air Command headquarters.

Not only the air defence of the West Coast but the protection of coast-wise shipping and patrols far out to sea were organized with amazing rapidity.

The Chief of the Air Staff, on an inspection tour of the West Coast, expressed his satisfaction, in cautious words, it must be admitted, but those who knew his

The heart of bomber, fighter and patrol operations is the "operations' room" where the movements of every aircraft and all shipping within a prescribed area are traced. Above, a fighter control officer directs an R.C.A.F. Women's Division officer as a report is phoned. Left, an operator transmits a report to other operations' rooms. Right, the situations' board, on which the position of all shipping and patrol flights is charted on the basis of reports received from aircraft, lighthouse keepers, and A.D.C. observers. Airwomen comprise a large percentage of operations' room staffs.

The enemy U-boat suffers one great disadvantage. Under water he moves silently and in comparative safety, but his time below the surface is limited. This shot was taken as a sub, which had come up for a life-giving breath of air, started to crash dive when an R.C.A.F. bomber swooped into the attack . . It was highly successful.

habitual restraint recognized them as a glowing tribute. "There is no one who can say that any force is competent to meet any threat," he said, "but it can be said that our forces on the Pacific Coast are adequate to meet the presently apprehended scales of enemy operations."

In the operations' room, the heart of the organization, it can best be discovered how the organization works.

It is a large, air-conditioned, modernly lighted room, around three sides of which runs a glass enclosed balcony. On the fourth wall is a huge metal map, about 25 feet wide and 15 feet high. This is the "situations' board" — an apt name, for it shows clearly the position of all shipping, and the course of R.C.A.F. patrols in progress.

In the centre of the room is a large table, the surface of which is a clear, well-defined map of the Command area. On this table are shown the movements of all aircraft known to be flying in that area, whether training, operational, American, Canada, or (perhaps) enemy. In the glass enclosed balcony surrounding the room sit control officers of the R.C.A.F., Canadian and United States Navy and Army.

To the left and right of the situations' board are blackboards providing a mine of pertinent information, chalked up as it comes in. The Air Force board, on the left, shows the state of air preparedness, time at which patrols are scheduled and their duration, air coverage being provided for convoys, reports of enemy activity provided by the intelligence officers, movements of U.S. naval forces and general intelligence which would help complete the

Above:—Like a bobbing cork this enemy U-boat heels over violently from the force of a depth charge explosion near its hull. Crater-like foam flecks appear close by the sub as heavy calibre machine-gun bullets splatter around.

Right: — Beautiful but deadly is this picturesque "blossom" raised by an exploding depth charge.

picture of activity in the command. On the navy board are shown movements of all merchant vessels and convoys.

Under the balcony, and around the room, are various tables on which officers plot courses and determine the position of aircraft and shipping which will be posted on the situations' board.

The operations' room at Headquarters is the largest of its type in the Command, but in the Group Fighter sector and Bomber squadron operations' rooms, the setup is duplicated on a smaller scale, representing an operation over the area under their control. The central operations' room is manned largely by airwomen and Navy Wrens and a few officers of each service. The girls around the Air Force table map wear earphones, and are in constant touch with the "filter" which sends out the information from the group headquarters. As word comes in, each moves the aircraft symbols on her section of the table. Reports on the movement of aircraft come in from several sources — radar posts, aircraft detection corps reporters and locater units at air force stations.

The operations' room emphasizes the importance of civilian aircraft detection, and the increasing accuracy of the reports is indicative of the work being done in this field by civilians. A.D.C. members range from school children to retired business men who volunteer for watching posts around the clock, and make possible complete coverage of aircraft movements. The A.D.C. is a highly efficient voluntary organization drawn from all walks of life.

The situation in regard to aircraft and airports available is shown by means of a series of coloured lights, on an "availability board". Divided into sectors, it shows how many fighters, for example, are on readiness at the various stations in the command. As the situation changes, a switch at the controller's desk changes the lights on the board. When a squadron is "ordered on patrol" the control operator flicks a switch, and the light flashes under that heading on the board. So the board shows the instant an aircraft is airborne, ordered to land, is in a given position, has landed and is refuelling, or has sighted the enemy.

The meteorological section, near the operations' room, maintains a steady stream of weather information into the room, and it is posted on a blackboard as it comes in. Like the operations' room itself, they work twenty-four hours a day to keep weather information up to the minute.

The picture is duplicated in the Group headquarters, on a smaller scale. Groups are concerned, primarily, with movements within their own area, and their situations' boards and table maps show that area with a slight overlap into other group areas. Through the filter room, the group controller keeps Command informed of every move in its own area, and passes on information that might concern another group.

Likewise, fighter sectors have an operations' room that covers their areas and they pass information on to group. Thus, while Command is responsible for the grand strategy of operations, the group and the sector initiate action in their areas and carry out the tactics.

The men who fly the long, wearying patrols are fighting men—and fighting men

'Round the clock', alert civilian A.D.C. watchers scan the skies for aircraft, friend and foe, and quickly phone reports to R.C.A.F. Headquarters, where every movement is noted in the "ops" room.

Civilian watchers like these are a constant source of information on aerial activity for Air Force Headquarters, and enable accurate plots of aircraft movements to be kept.

want action. But on the West Coast, so far, battle action is yet to come. Nevertheless, with admirable patience and fortitude, the crews go out daily, scouring every niche in the coast, every square mile of adjacent waters. Their worst enemy is boredom, but they staunchly man their posts and keep their fingers crossed for the tell-tale wake of an enemy U-boat.

West Coast patrols lasting many hours are started periodically throughout the day and follow a pre-arranged course which will take them over a prescribed area.

The crew of a Canso consists of eight men. They are the first pilot, or captain of the aircraft, second pilot, first and second navigator, first and second wireless air gunner, a flight engineer and a rigger, who is also an air gunner and chief cook on a long patrol.

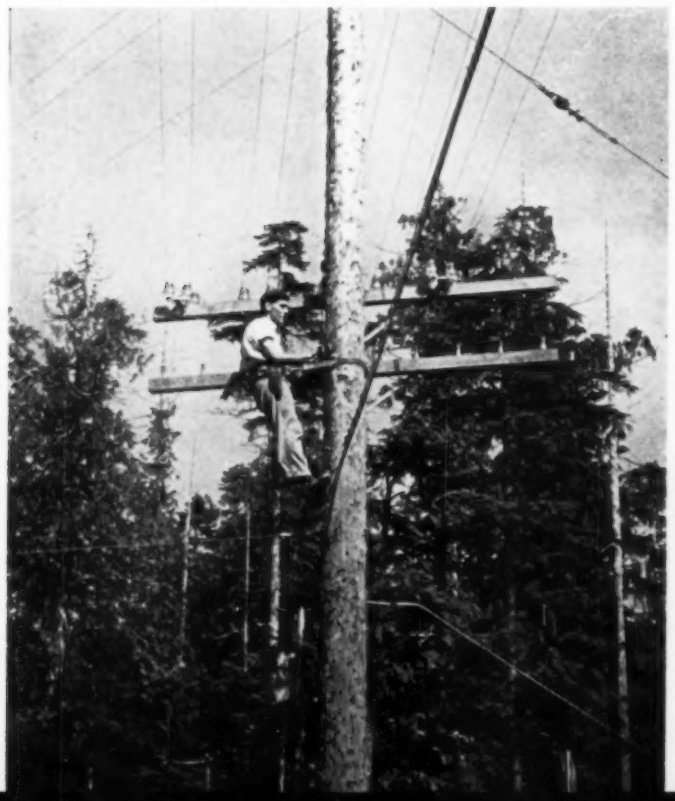
Long before a patrol takes off, the giant Cansos are worked over thoroughly by ground crews, and as the aircrew prepares to go aboard, the lethal load of depth charges is slung under the wings.

First item to go aboard is the food supply. On long patrols the crew would be supplied with bread, butter, oranges, fruit and tomato juices, tinned peaches, bacon and eggs and coffee or tea. Appetites are whetted as keen as a razor on these long trips in sea-moistened air, and meals are usually served up at the half-way mark on the patrol.

Next aboard are the well-oiled Browning guns that give the Canso her sting — guns for the blisters, the nose and underbelly. The rigger sets up the blister guns, and stows the others, which will be positioned later on the patrol.

The navigator clambers aboard with his bomb sight, and W.A.G.s take up position at their radio equipment, to give it a quick check.

As the pilots take over their position in the nose of the aircraft, the flight engineer primes his little auxiliary power motor which will generate enough current to give the batteries a boost for starting. At the pilot's signal, he pulls the string and the motor breaks out into an outboard-



Through dense, virgin forest, R.C.A.F. linemen have carved channels through which to string essential communication lines.

The navigator is the man who brings home the aircraft and crew. Checking his position by wind, drift, sun and stars, he plots the course of the patrol out to sea and back to base. Here a navigator takes a sextant sighting through the astro hatch of a Liberator.

motorish whine, soon to be drowned out by the roar of the aircraft's motors as they start up. The engineer takes his post, which is behind and above the two pilots, and with a myriad of instruments before him, checks to ensure that all is in good order.

The big Canso which looks like a waddling duck on land, rolls down the slipway into the sea, and when her wheels are retracted she's ready for the take-off. If weather holds, it will be long hours before her hull touches the rippling ocean again.

The Canso is a big aircraft. Inside her large, bulging hull, movement is fairly unrestricted. In his rear blisters, the gunner — who enjoys the best view of any one — can move about freely and stand up without crashing his head on the roof. Forward of his bailiwick is the sleeping compartment, where several bunks are provided. This is the galley too, and a pair of electric hot plates provide for cooking when meal-time rolls around. Forward of this is the navigator and wireless operator's room. The navigator has before him a large table for his maps and instruments, and on his shoulders rests the responsibility for accurately plotting the course of the patrol and bringing it back to base. With his back to the navigator is the wireless operator, who mans the radio and the submarine detecting unit.

The patrol is a long, weary, monotonous routine, but, nevertheless, at no time can the men on duty relax. At any second, the herring-boned wake of a submarine might ripple across the ocean, and swift

action would follow. Coastal boats must identify themselves, and all suspicious looking objects are investigated.

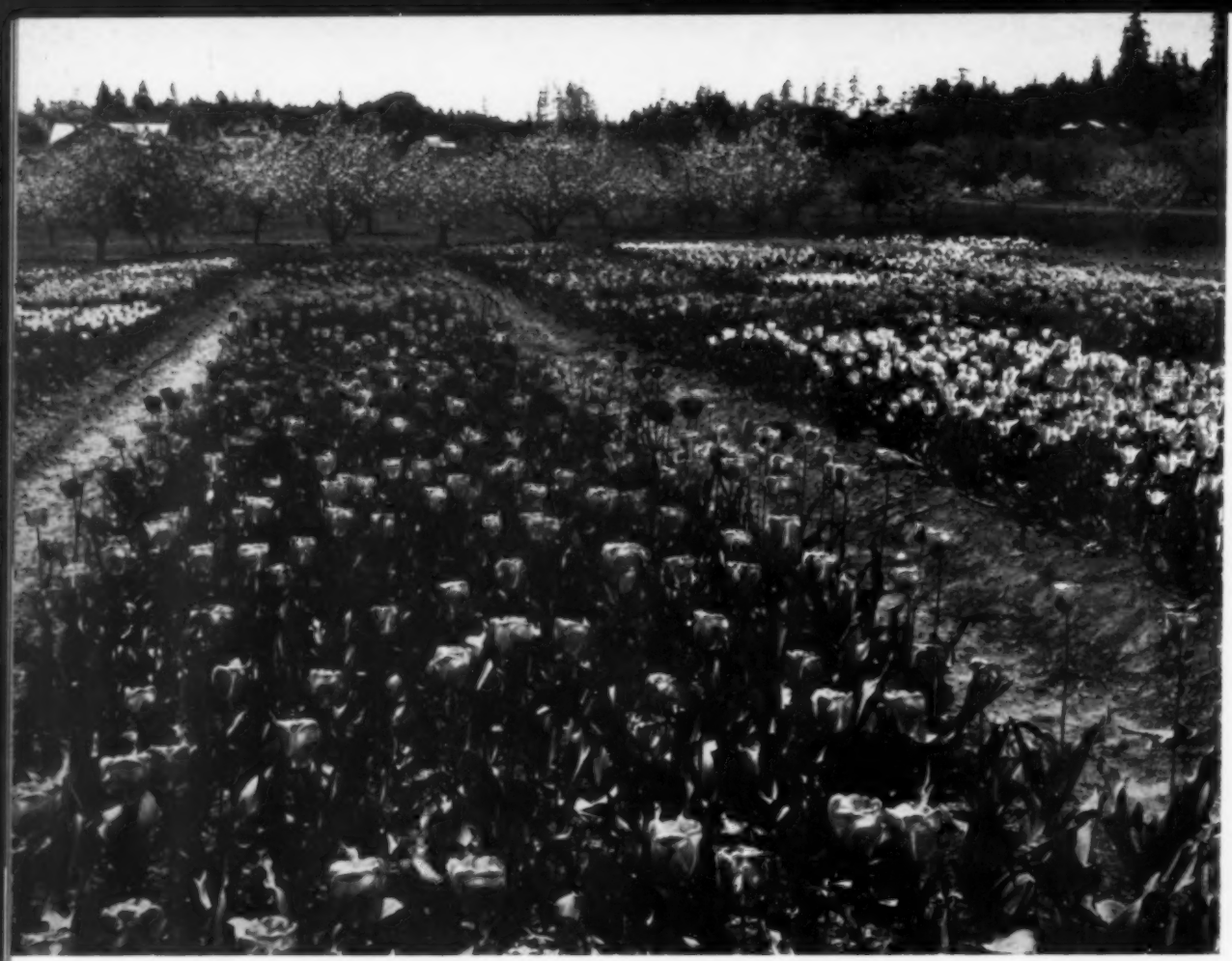
Weather is a mean factor on the West Coast. Rolling in across the Pacific, the weather is made far out at sea and man knows nothing of it till it hits land. Accurate predictions are virtually impossible. In the summer months fogs are a constant menace. They roll in at night like a great dark cloud, and it is often noon the next day before they disperse. A pilot often finds himself going out with clear skies overhead, to run into miles and miles of woolly cloud hanging low over the Pacific. On attempting to return to base, he may find it completely closed in, and spend the next few—and often many more—hours looking for that elusive "hole" through which he can plunge to get beneath the vaporous blanket.

Some day, no doubt, the long and relentless patrols these men carry out will produce action and results—and they crave action. But, in the meantime, they carry on without complaint, and they keep the enemy, if he does venture into West Coast waters, under the water, where he is ineffective.

In the West, then, as in the East, the R.C.A.F. Home War Establishment is ready . . . not as a reserve organization or as a training unit but as a vital component of the offensive and defensive structure of the allied nations.

There is little glory to be gained and much hard, monotonous work. But maybe there will be a "picnic" to-morrow.

Sea rescue is an important phase of operations in the Home War Establishment. High speed launches make swift mercy trips, often far out to sea, to rescue downed crews.



The Dominion Experimental Farm at Saanichton maintains varietal test plots of tulips in addition to other experiments with bulbs.

G. A. Maves photo

THE BULB INDUSTRY OF BRITISH COLUMBIA

by **R. J. HASTINGS**

WHILE the snowdrifts still linger in the fence corners and chill breezes wander down from Arctic ice fields, Canadians watch their gardens for the first appearance of those flowering bulbs which are the sure sign of spring. With Bliss Carman they see that,

"The blue hepaticas are out
The daffodils and tulips
Are risen from the tomb
The lances of narcissus
Have pierced the wintry mold;"

The so-called "Dutch bulbs" have long occupied an important place in the home and public gardens of Canada, so important in fact that over thirty million bulbs were imported annually before the war. With supplies entirely cut off from Holland and severely curtailed from England, Canadians might have had to rely solely upon their memories of these bright harbingers of spring. Even at that they would have been in good company, for was it not Wordsworth who, remembering that golden host of flowers he saw on one of his walks by an English lake, said,

"And then my heart with rapture fills
And dances with the daffodils".

Fortunately the climate of Vancouver Island and part of the mainland of British Columbia is extremely well suited to the production of those bulbs which are most popular with Canadian florists and amateur gardeners, and when war broke out a

Daffodils on farm of W. T. Edwards, Gordon Head

young industry was already being fostered by progressive growers and experts of the Provincial and Dominion Departments of Agriculture. This industry may be considered an offshoot of the world-famous Holland bulb industry, for the kinds of bulbs grown in British Columbia are essentially similar to those grown in Holland and England, whence most of the original propagation stock came. To learn the background of commercial bulb production there is no better way than to review developments in Europe and to compare the conditions of present bulb districts in America with those of the older continent.

European Bulb Industry

The principal kinds of bulbs grown commercially in Holland are narcissus, tulip, hyacinth and iris. These are popularly referred to as "Dutch bulbs", and all are derived from native species inhabiting countries in Europe, Asia Minor, and North Africa bordering on the Mediterranean Sea. Clusius, the noted herbalist of the sixteenth century, was one of the first to engage in the commercial cultivation of bulbs, but he did not introduce the industry to Holland, although his splendid collection of tulips did much to arouse public interest in bulb culture. From an obscure beginning in the sixteenth century, Holland became recognized as the home of bulbs, the fountain of bulb lore. The quest for unusual colours is embodied in the interesting novel by Alexandre Dumas entitled *The Black Tulip*. Then there was the speculative period of tulipomania when new varieties sold for fabulous prices, and gambling became rife and threatened the industry. This subsided in due course, however, and the industry developed steadily, but up to 1850 it is believed that there were only a little over 700 acres. This is a relatively small industry compared with that preceding the outbreak of the war, and it would appear that the greatest expansion of bulb culture in Holland occurred in the early part of the twentieth

Short cupped daffodils with their brilliant orange-red centres

century, as there were 15,000 acres in 1929, and 29,000 acres in 1932.

At this time a bulb industry was also developing in Lincolnshire, England, in serious competition with the Holland growers who had supplied about 96 per cent of the English bulb imports up to this time. Indeed 54 per cent of the Dutch output was exported to England which

Potted tulips are a source of delight in the early spring as they send up their rich green leaves, and their buds open into cups of glossy bloom in shades ranging from brilliant yellow to midnight maroon.

Mr. J. Everett surrounded by a field of gold created by 100,000 of his King Alfred daffodils. No flowers are cut for sale here.

was Holland's best customer. This situation, together with definite overproduction, brought prices down, and in 1934 the Dutch Government drastically curtailed bulb plantings to 18,000 acres.

Up to 1934 the bulb industry in Lincolnshire occupied over 3,000 acres of land, mostly in the Fen Country with Spalding as the centre. Haarlem, the Dutch bulb centre, is on approximately the same latitude as Spalding — the 53rd parallel, separated by a narrow strip of the North Sea. It is thus in these relatively small areas that the bulb industry of Europe is situated, for the tender bulbs grown in the South of France, the Channel Islands, Scilly Islands and Southwest England, are relatively insignificant, and other countries, importers from Holland, do not appear to produce more than enough for home use.

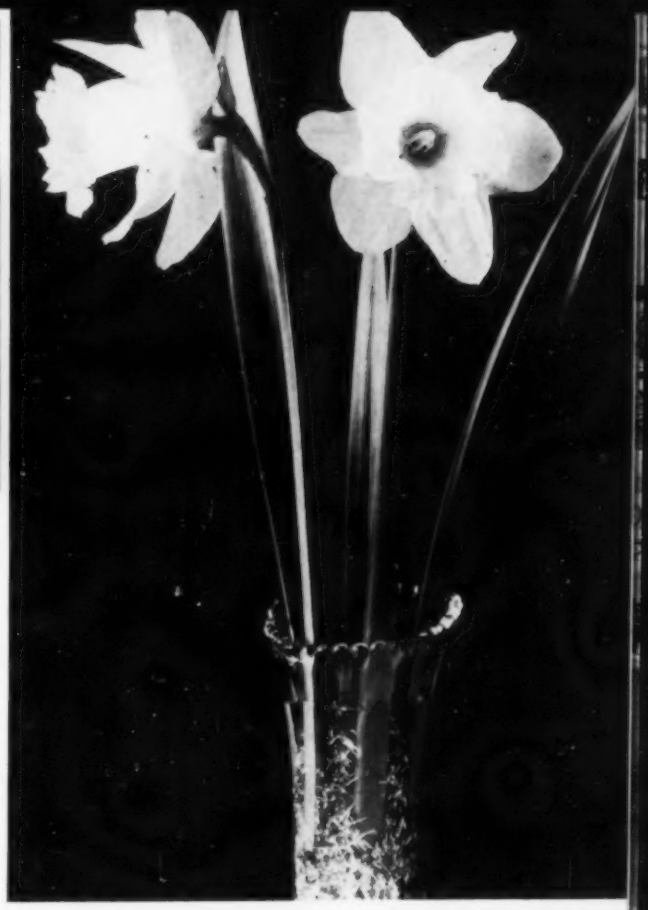
North American Bulb Industry

In North America, we have a similar concentration, for here the "Dutch bulb industry" exists mainly in the regions

The happy atmosphere on a bulb farm is attested by the

Sunday visitors at J. Everett & Sons' million-bulb farm at Port Kells, Cloverdale, often number more than a thousand.

bordering on the Puget Sound, Strait of Georgia, and Strait of Juan de Fuca, including the southwest corner of British Columbia and the northwest corner of the United States. An inspection report of narcissus bulbs issued in 1931 states that 65 per cent of the daffodils produced in the United States were grown in Washington and 12 per cent in Oregon. The bulb farms of Saanich and Gordon Head on Vancouver Island face those of Washington at Whidby Island, Bellingham and Linden across the Strait of Georgia, and mainland British Columbia bulb farms on the coastal areas abut on those of Washington. The American industry is generally a little further south than the European industry, for it is close to the International Boundary on the 49th parallel. Apparently "Dutch bulbs" succeed best in cool climate, but the extremes of temperature and humidity must also be tempered by the moderating influences of moisture-laden warm sea breezes. The European industry receives its moderating influences from the Gulf Stream, the American industry from the Japan current.



Daffodils of the gorgeous golden trumpet type

Apart from the "Dutch bulb" industry, however, the United States has a tender bulb industry producing paper white or *polyanthus narcissus* in Florida, California and South Carolina.

The British Columbia Bulb Industry

The bulb industry of British Columbia could correctly be called the bulb industry of Canada, for the 1941 report of the Dominion Bureau of Statistics shows that

ed by the broad smiles of these two girls and Mr. Ray Wooldridge.

Tulips with their brilliant variegated colours provide one of the most popular cut flowers for home decoration in the spring.

99 per cent of the narcissus, 96 per cent of the iris, and 95 per cent of the tulips grown and sold in Canada were produced in British Columbia.

Bulb statistics often include gladiolus, and it is the only "bulb" crop that is grown on a large scale across Canada. The British Columbia production of gladiolus corms amounts to only 29 per cent of the Canadian output.

Gladiolus are spring planted, while "Dutch bulbs" are autumn planted, so we may state that spring planted bulbs can be grown across Canada, but autumn planted ones only grow to maturity in British Columbia. It is thus apparent that the limitation is due to climate. The British Columbia bulb industry is thus national in character, and the 300 odd acres devoted to it cannot be utilized for other purposes without loss to the rest of Canada. This industry is away to a good start, and will rank among the important agricultural pursuits of British Columbia and Canada.

Birth of British Columbia Bulb Industry

Gordon Head on Vancouver Island is probably the oldest bulb district in British Columbia. There are now over five million daffodils, two million tulips and two million irises planted in Gordon Head within a few miles. Gordon Head could be called the cradle of the bulb industry for, until a short time ago, very few commercial bulb farms were to be found elsewhere. There is a tendency to spread out to Saanichton now, and northward to the Cowichan valley about 40 miles north of Victoria. Few bulbs are grown north of Nanaimo. There are over 50 bulb farms on South Vancouver Island, but the majority are concentrated in Gordon Head and Saanich near Victoria. South Vancouver Island enjoys a mild winter, adequate precipitation in winter and spring for growth, and an ideal cool summer with two or three months of fair weather in June, July and August, when sunshine but not too dry an atmosphere provide excellent conditions for maturing, harvesting and curing the bulbs.

The mainland bulb industry has developed chiefly in the Bradner district in the Fraser valley, about 40 miles east of New Westminster. There are over three million bulbs planted in Bradner, practically all daffodils. An interesting feature at Bradner is the collection of novelties carried by each grower in addition to his stock of commercial varieties. Some of the novelties are recent introductions and still highly priced. Over 300 varieties of daffodils can be found in Bradner. The Bradner growers hold an annual daffodil show, and the last show in 1942 contained such a splendid display that authorities state that the collection could not be excelled or even equalled in America.

A smaller but important bulb centre in the Fraser valley is at Cloverdale, where about half a million daffodils and half a million tulips are grown. Then there are other bulb farms scattered all the way from Vancouver to Sardis, but, as we go inland, the climatic conditions are less favourable, and it is feared that the cold winter winds that sweep down the valleys may be too severe further inland.

Another mainland bulb industry is situated in the interior along the shores of the Okanagan Lake. Here the hazards of winter are great, and the industry has stood at around ten acres since 1929.

Forecast of Expansion During Wartime

The stimulus of bulb production caused by firm markets and good prices resulting from a shortage of bulbs in Canada was expected to result in a substantial expansion of the bulb industry in British Columbia. From 1940 to 1942 there was a considerable increase in tulip acreage, but contrary to expectations, narcissus, iris and hyacinth acreage has not increased. This is not due to less favourable financial prospects in the culture of these crops, but to the scarcity of planting stock. The narcissus grower who would not deplete his planting cannot afford to sell much more than 15 to 20 per cent of his stock at any harvest, for narcissus do not increase fast enough to permit it, but the last two years has seen more over-selling to satisfy the eastern forcers' demands, and actually cause a slight decline in narcissus acreage.

The scarcity of planting stock has given birth to a wartime trade in forced daffodil bulbs which formerly were destroyed by the forcer. In 1941, about 200,000 bulbs were shipped back to British Columbia for replanting, from Eastern Canadian forcers. In 1942, over one million were returned. This trade is likely to continue so long as the more desirable field-grown planting stock continues scarce,

but the growers are taking proper precautions by quarantine, inspection and treatment of the stock, in close co-operation with the Department of Agriculture. Although this trade will naturally offset the depletion of stocks from over-selling, yet it is not sufficient to increase narcissus acreage.

Tulips, on the other hand, are prolific producers of planting stock, in addition to yielding a marketable bulb from every bulb planted above eight centimetres in size. There is a natural tendency, therefore, for a 10 to 15 per cent increase in area each year when all the small pea-size stock is saved. In pre-wartime, these were frequently destroyed. We may, therefore, predict a steady increase in tulip acreage each year, and undoubtedly this will occur on Vancouver Island. But what of the more distant future? Can the British Columbia bulb industry expand much more without risk of over-production, and what are the inducements that attract people to engage in bulb culture? These are questions which naturally enter into the mind of the reader who has followed our review of the past and present of the bulb industry.

Prospects in Bulb Farming

The value of land in the bulb districts of British Columbia is generally rather high, hence much of it has been carved up into small holdings. The production of bulbs is perhaps better adapted to the intensive cultivation of small holdings than to large operations. This is especially true of tulips.

Bulb cultivation will yield very profitable returns only when the operator works with knowledge, skill and intelligence. Every mistake is costly and will cut deeply into the profits. Therefore, no one should engage in bulb farming until he has acquired knowledge and experience from successful bulb growers, and advice from the Department of Agriculture. The prospective grower should not attempt a bigger planting than he can manage efficiently. Tulips give the quickest returns, and it is possible in a single season to recover all the money invested in the planting stock from the first harvest a year after planting. Narcissus investments are recovered more slowly, but the returns are steady and good once the planting has been established. The following are some important points that merit consideration when planning operations on a bulb farm in British Columbia.

Land. All bulb crops must be grown under a well-planned scheme of rotation. Tulip and hyacinth prefer sandy loam, narcissus and iris, clay loam. All must have good drainage. Soil reaction is less important than good tilth. Lime is generally beneficial.

Space between bulbs. The space between bulbs is one to two times the diameter for narcissus, and three times the diameter for tulips. The returns from tulips planted one diameter apart are only half of those planted three diameters apart. Crowding the bulbs is a costly mistake. Three to seven inches is satisfactory depth. Depth

Tractors supply the power for preparing the land, planting, cultivation, harvesting, etc. on the bulb farms operating on a large scale.

is not nearly as important as space except in region with severe climate.

Date of planting. Planting should commence in September. Each month that planting is delayed after September may cut the value of the following harvest by 20 per cent per month. Delay is very costly.

Fertilizers and manures. No fresh manure should be applied to the bulb land in the year of planting. If the soil needs enrichment it is better to apply a complete fertilizer at the rate of five to ten hundredweight per acre. The 4-10-10 formula gives good results. Fertilizers should be applied in the autumn, never in the spring, because of doubtful benefits and certain risks of burning the foliage when applied in spring.

Planting stock. The size of the planting stock is most important. Small bulbs are the most profitable to plant in both narcissus and tulips. Never use forcing size bulbs as planting stock because they do not produce enough in proportion to cost.

Work on a Bulb Farm

The work on a bulb farm is very steady, and very interesting. The progressive bulb grower is a constant experimentalist. The spring work with tulips opens very early, often in February, and one of the first jobs is that of inspecting for and taking out diseased plants. This job and weeding and cultivation keep the tulip grower busy until the bulbs come into bloom. Then he has to hustle to rogue out foreign varieties and "broken" or virus infected plants. This is succeeded by disbudding, for the blooms must not be left to form seed at the expense of building up size in the crop of new bulbs. After flowering, the ground must be kept in a high state of cultivation, for the young bulbs make their greatest gains at this period. Soon the small stock will commence to ripen, then the small flowering stock, and lastly the large bulbs. As soon as the leaves of the small stock have turned all pink, harvesting may commence, usually from about the second or third week in June. Tulips are generally hand dug, for there is no satisfactory digging implement. The bulbs should be dug in their order of ripening, and a good plan is to have the bulbs cleaned, graded and stored within 24 hours of digging. This will insure better quality and less damage to the outer papery brown skins or tunics.

Daffodils do not demand as much attention in the spring as tulips. The work consists mainly of cultivation. Excepting the virus disease which is controlled by the early removal of mottled plants, disease is not rogued out of the planting but is controlled by periodical lifting and immersion of the bulbs in the hot water formalin bath treatment for one to three hours at 110°-112°F. in early August. Daffodils are less delicate than tulips and can be harvested with a plow or a mechanical bulb digger. Harvesting commences in July and may last until August. The saleable bulbs are graded as soon as possible and the rest are given the hot bath and stored away until time for

The bulb cleaner, daffodil grader, iris grader, sorting table and bulb cooker are indispensable equipment of the bulb farm.

replanting. All kinds of bulbs are graded and packed for shipment in August or early September. When the shipments leave, the planting season is again at hand and may last until late October or November, depending on the weather, for by this time the rainy season on the coast has come around again. Thus, except for a brief slack period in December and January which the grower may profitably utilize to make trays, overhaul equipment, etc., the work on the bulb farm keeps the grower busy, and he may continue this way for many years, for there is no present indication that bulbs will be a glut on the market in Canada.

Markets

The British Columbia bulb industry at present produces about two million tulips, one and one-half to two million daffodils and one million irises for market, and against this the probable consumption in Canada, as suggested by adding former foreign annual Canadian imports to British Columbia output, is fifteen and one-half million tulips, twelve million daffodils and three and one-half million irises. Thus, if British Columbia supplied all Canada's requirements, the tulip industry would have to expand elevenfold, the narcissus industry ninefold, and the iris industry threefold. Formerly, most of the requirements of Eastern Canadian forcing houses were supplied by Holland and England, and British Columbia got only a small fraction of this trade, hence many of the growers engaged in the production of cut flowers for the local and prairie markets, but this business is giving place to bulb production, especially as shipments going east have usually been commended by the consignees. The forcers find that British Columbia bulbs generally bloom earlier, and they can depend on their arrival in good time.

Safeguards

The Dominion and Provincial Departments of Agriculture through the Science Service and Horticultural Branch, have taken an active interest in improving the prospects in bulb farming. At the present time, they co-operatively undertake a field inspection service on a voluntary basis. When the fields are inspected the grower is advised by letter within a few days of the condition of his plantings and safeguards and methods of control for

diseases and pests are included. The grower is also advised to adopt standard grading and may, by applying in writing, have his grading verified by a government inspector. In support of this service, the Horticultural Branch has issued a series of circulars dealing with bulb culture, bulb treatments, etc. This service is appreciated by the growers generally, and there exists a cordial relationship between them and the government advisers which is reflected by a manifest willingness on the part of the growers to adopt recommendations. This co-operation, coupled with the skill brought to bear by the growers themselves, has done much to raise the quality of British Columbia bulbs and to increase production and profits.

CANADA'S NORTHERN AIR ROUTES

by D. B. WALLACE

CANADA is basically a transportation problem. In fact it is doubtful if the growth of any modern nation has been so conditioned on the progressive growth of transport vehicles. The economic, political and social life of the Dominion has been closely interwoven with the technological advance of transportation.

The development of the east-west Canada of to-day has largely been the result of this continuous expansion of surface transport in the form of rail, road, and river units. In like fashion this transformation has largely taken place in a narrow industrial and agricultural belt extending from the Atlantic to the Pacific to a depth of a few hundred miles north of the international border.

To-day there is a new north-south Canada rapidly emerging as the aeroplane, the latest and most revolutionary vehicle in the history of transportation, expands the concept of Canada to the far reaches of the Arctic Ocean and ultimately projects it into an integrated global air structure.

The dramatic aerial events taking place in Canada's Northland are a vital portion of a much larger world picture. No longer are we chained to the ground as the aeroplane weaves aerial networks across continents and oceans. A transportation revolution is in the making, and Canada, a natural for the development of air facilities because of its pivotal position on the world air map, is keeping pace with those nations moving into the dynamic world air structure.

Many Canadians yet fail to realize the area of this "New Canada" which lies north of Edmonton. It is 1,100 miles from Edmonton to Whitehorse while north to Aklavik on the shores of the Arctic it is 1,500 miles. Great mountain ranges and broad valleys have to be traversed to reach these points. Due to the rapid advancement of flying in these regions the former slow methods of surface transport have been relegated to an inferior position, and to-day the aeroplane is duplicating in the North what the steam locomotive did for the West half a century ago.

Perhaps the most succinct summarization which has been made of Canada's northern destiny is embodied in the following paragraph from *Canada Moves North* by Richard Finnie, in which this noted student of Arctic conditions stated: "Canada moves north. Canada must move north. Mining and industrial development will creep over the Circle and onward to the shores of the Arctic Ocean. Soon, with freight and passenger planes sweeping back and forth over the Polar Basin between Europe, Asia and North America, the Arctic Islands will become way stations."

The realization of this prophecy will be dependent, in a large measure, on the role played by the aeroplane. Already it is admitted that the greatest single factor in the large scale development of Canada's far northern regions has been the air carrier. In fact, flying freight services had their inception along Canada's northern air routes, and at the outbreak of war the Dominion's flyers carried the world's record tonnage of commercial air cargo. The history of this development goes back to 1920, when the rather insignificant total of 6,740 pounds was carried, and moves forward progressively to 1937 when the record volume of 24 million pounds was carried by air. Even in 1939 the air freighters of Canada moved 19 million pounds which compares with 9½ million pounds carried in the United States during the same year.

Northern air services also indicate that in Canada, unlike most countries, air routes were started originally from rail head northward to outlying regions rather than paralleling existing surface routes between heavy interurban population centres. The present air routes in Northern Canada are essentially complementary to both the transcontinental airline and to the great east-west railway systems.

Air freight services to northern points commenced on a major scale in 1926 in the Red Lake District of Northern Ontario and extended to the point where, in 1928, commercial aviation in Canada was rapidly expanding throughout the broad expanse of the North, and several companies were extending bush flying activities from coast to coast. In that year, C. H. Dickins, now Vice-President and General Manager of Canadian Pacific Air Lines, piloted the first plane over the "Barren Lands" of Canada's Northwest Territories. In the following year he crossed the Arctic Circle and brought his Fokker monoplane down at Aklavik. This trip to the shores of the Arctic Ocean revolutionized the fur delivery system, and almost overnight the aeroplane became the transport medium replacing the dog sled and canoe of former years.

Planes service Yellowknife mining development, N. W. T.

View of part of Aklavik on the Arct

Other intrepid flyers followed a like course in opening up many new routes. In 1930 what is now the United Nations' greatest source of radium was discovered in the Far North at Great Bear Lake by plane. The aeroplane also played a prominent role in locating the richest mercury deposit in the British Empire in northern British Columbia. It is also significant that as early as 1931 the possibilities of Northern Canada with relation to global air routes were given world attention by the Lindbergh flights across the North to the Orient. In 1931-32 the aeroplane developed many new northern mining fields, and, by 1933, while flying was still not fully accepted in the more populated southern districts of Canada, the aeroplane had become a commonplace factor in the northern regions of the Dominion.

While these actual examples indicate the practical expansion which took place in developing northern air routes it still is a fact that, despite the intense interest in northern aerial developments during the past decade, and particularly since the present conflict commenced, the aerial advantages of this segment of North America have been known for some considerable time.

As early as 1915 the present Deputy Minister of Mines and Resources and Canada's outstanding student of northern conditions, Dr. Charles Camsell, made enquiries about obtaining flying boats for the exploration of the sub-Arctic. In 1917 the world-famous Arctic explorer, Vilhjalmur Stefansson, wrote to Sir Robert Borden urging the Government to institute an official survey of transpolar air routes, and one of the staunchest supporters of this proposal was J. A. Wilson, now the Dominion's Director of Air Services, and one of Canada's senior government officials who has been prominently associated with the growth of air services throughout the entire history of commercial aviation.

Even in 1922 the Canadian Government recognized the fact that the shortest routes between North America and Europe and Asia all pass through Northern Canada, and the authorities at that time had an aerial survey made of the islands of the Eastern Arctic. This study by Major R. A. Logan, however, did not merit full governmental support, as certain key officials considered transpolar flying as being somewhat fantastic.

Meanwhile resourceful and energetic pilots and small operators carried on their experimental work against great climatic and financial difficulties to lay the groundwork for the present extensive air network. Back of the recent sensational air expansion in Canada's Northland lie almost two decades of development, and it is admitted that without the experience of bush flyers and commercial air companies many of the present northern vital routes, together with valuable background operating data, would not presently exist.

Perhaps the most outstanding company engaged in northern aerial work was Canadian Airways, which, founded in 1930 by the late James A. Richardson of Winnipeg—one of the greatest contributors to the development of Canadian aviation, provided air services throughout many

on the Arc 1,500 miles north of Edmonton

Eldorado Gold Mines and property on Great Bear Lake where radium ore is mined, one of the two most important producers of radium in the world

regions of Canada. It secured the first airmail contract in Canada and also pioneered the daylight flights on the prairie section of the transcontinental air route. It was well known throughout the Dominion particularly in northern areas, and in the fifteen-year period between 1927-1941 carried the record total of 80 million pounds of air cargo, 8 million pounds of airmail, and 250,000 passengers. These facts have long been hidden by the remoteness of the area in which the carrier operated, but are now becoming known as more extensive studies are made of the possibilities of northern flying.

Then there is the story of Yukon Southern Air Transport. This inverted Y-shaped route operated northward from Vancouver and Edmonton to Whitehorse and Dawson and was founded by Grant McConachie, well-known northern air pioneer. Back in 1935, Sir James MacBrien flew overland from the Yukon across British Columbia and wrote in his diary that "Undoubtedly this route will be flown frequently in the future as it is one of the great routes from the United States and Canada to the Far East". It was Grant McConachie who accepted the challenge of this vast northern wilderness and after charter flights were made in 1934-35, a schedule mail service was commenced in the latter year between Fort St. John and Fort Nelson, and mail and passenger service between Edmonton and Whitehorse was inaugurated November 5, 1937, and the run was shortly extended to Dawson.

The line progressively grew in size and equipment until, at the outbreak of war, it was a most important factor in the northern air transport picture. Pioneer work done by this company in laying down landing strips and airfields assisted materially in locating the joint defence airfields and the Alaska Highway.

These two companies, along with other operating units, are now integral parts of Canadian Pacific Air Lines. While the Canadian Pacific Railway Company secured a charter from the Dominion Government in March, 1919, giving it the right to own and operate aircraft within and without Canada, it was not until 1930 that the company made an investment in Canadian Airways, then the nation's largest privately-owned air carrier.

In 1939 the Canadian Pacific undertook a survey of the nation's privately-owned air companies, and, as a result of the findings developed, further expanded its holdings in Canadian Airways and Yukon Southern, while interest was acquired in eight other smaller lines operating local services in various parts of the Dominion. In certain areas these companies operated duplicate and triplicate routes, but, with the Canadian Pacific exercising managerial control, plans were made to eliminate uneconomic and wasteful duplication, improve and standardize equipment, and place northern airlines on a sound financial and operating basis to provide maximum service to the public and presently to render invaluable aid in connection with the war effort.

The formation of the Canadian Pacific Air Lines took place early in 1942 and the

Map shows location of airfields on the road to Alaska.

W. I. B. photo

company now operates approximately 80 planes, has 1,300 transport employees, and 12,000 miles of north-south scheduled routes. During its first year of operation in 1942 CPA carried 10 million pounds of air cargo, 60,000 passengers and 1,750,000 pounds of airmail and flew 5.2 million plane miles.

Besides the widespread aerial transport services provided in central and north-western Canada the company also rendered essential air transportation to assist in the development of the Goose Airport in Labrador during 1941-42 and has flown important supplies and equipment in connection with defence projects being erected for the governments of Canada and the United States in various parts of north-eastern Canada.

In addition to the vital service which CPA is rendering the nation's war effort with regard to the movement of essential cargo and personnel along northern defence routes, the company is the largest single civilian organization connected with the British Commonwealth Air Training Plan and operates, on a non-profit basis, six Air Observer Schools and one Elementary Flying Training School. It also manages five engine-overhaul and aircraft-repair plants under contract to the Department of Munitions and Supply for the overhaul and repair of R.C.A.F. equipment. To perform these vital tasks the company now employs over 7,300 employees in its transport operations, air-training schools, and aircraft overhaul plants.

As a result of the formation of CPA through the integration of practically all the pioneer northern air companies in Canada, the company has acquired the services of many of Canada's leading flyers. Already its staff officers include such well-known Canadian air personnel as C. H. "Punch" Dickins, G. W. G. McConachie, W. R. "Wop" May C. R. Troup, G. A. Thompson, W. Wollett, Air Commodore Hollick-Kenyon, Ted Field, Walter Gilbert, and a number of others who are either associated with CPA in its present war transport operations or hold administrative or operating positions with its affiliated air-training schools and overhaul plants. The background knowledge possessed by these men will be of inestimable value in the post-war development of Canadian aviation and particularly the further expansion of air facilities and general progress throughout the North.

The value and importance of the northern air services have been proven beyond all doubt in this war. To-day on CPA's north-south routes extending from the St. Lawrence to the Pacific and north to the Arctic, over 90 per cent of the traffic carried is connected with war developments. The Alaska Highway, joint defence air route, oil wells, pipeline project, radium and mercury mines, and other vital minerals, have all been developed in the space of a few years because the aeroplane was available to get them started and keep them going.

It is doubtful if any portion of the world has used the aeroplane for carrying freight to a greater extent than Northern Canada. It is here utilized extensively and almost wholly as a common vehicle of transport and not a competitive means of luxury travel. Canada north of the 53rd

parallel has largely been developed by air and it would seem reasonable to assume that its future expansion will likewise depend considerably on the use which is made of present and expanded air facilities.

The aeroplane has long been synonymous with northern travel. It is a mode of transport which adapts itself readily to existing conditions. It is a truism that Indians, Eskimos, and prospectors, many of whom have never seen a street-car, automobile or train, were seasoned air travellers before their fellow citizens in the more highly populated areas of Canada.

In one particular field alone, that of fur transport, the aeroplane virtually revolutionized the industry and eliminated a year's delay in getting the furs out to markets. Even to-day on the shores of the Arctic the fur trading companies make the fullest possible use of air facilities to readily despatch their rich cargoes of fine furs such as mink, marten, fox, lynx and otter to the markets of the outside world. Radio has also assisted in keeping them posted on current fur auction prices, which facility has naturally made it possible to use the speedy air transport service to the maximum result.

The route of the famous Alaska Highway was made to parallel the airfield chain and the highway route was also chosen by means of aerial photography. Small planes were used to fly survey parties and trail blazers ahead of the road builders and to equip and supply advance units. They carried executives to strategic places for meetings and conferences. At one time CPA planes carried 50,000 pounds of airmail monthly to Army camps along the highway, and figures showing the record movement of express would be even more startling if permitted to be published.

The newest and latest extensive surface transport development in the North is that known as the "Canol" project. It is from this $150 million oil project a scant 100 mile south of the Arctic Circle that the United Nations hope to draw a large share of their oil supplies for servicing Army and Air Force equipment in the northwest defence area. To assist in having daily air services on the 1,200-mile route between Edmonton and Norman Wells, where a decade ago a plane made the trip perhaps once a month, landing strips were hacked out of the bush by United States Army engineers.

This has been one of the outstanding feats achieved under the stress of emergency conditions now prevailing. Cost has naturally been a relatively minor factor as important defence benefits have been desired and transportation in all its forms has been expanded to meet ever-increasing demands. It is equally obvious that the vast physical transport network erected for war purposes, and much of it a permanent nature, will have far-reaching consequences in peace-time.

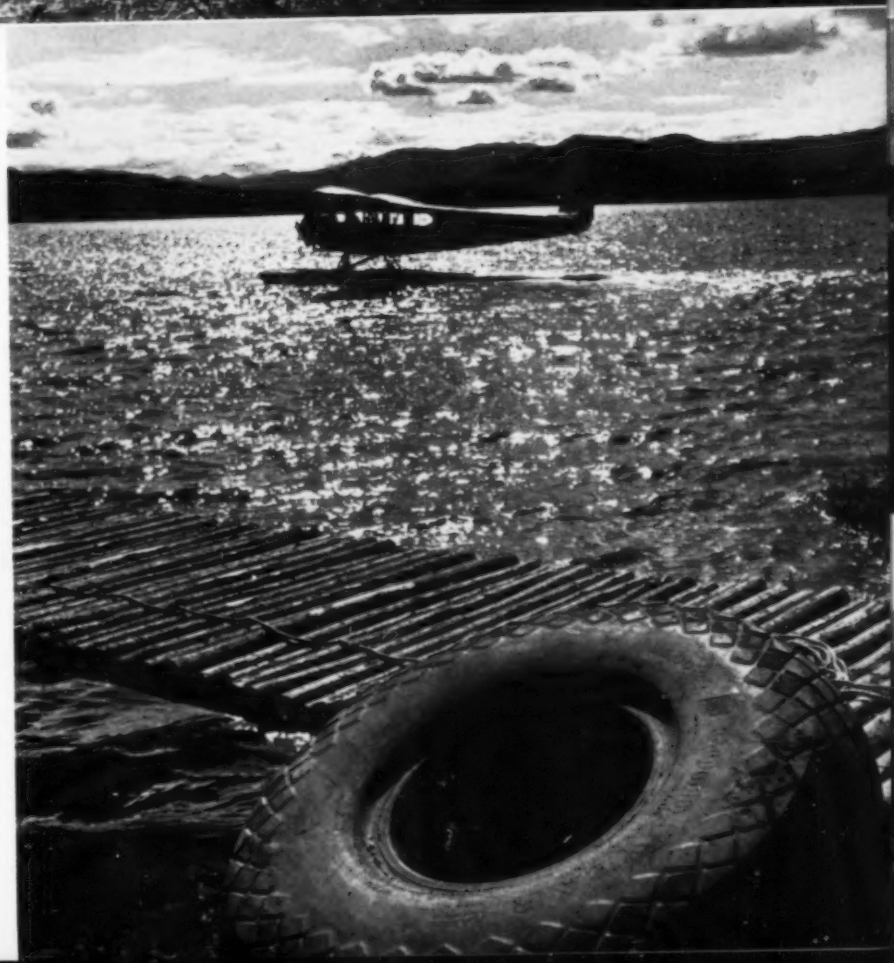
The impact of the war on Northern Canada has effected one of the most outstanding transportation revolutions in the history of mankind. Perhaps never before have all forms of transport progressed and expanded concurrently. Highway, airlines,

A big United States Army transport plane projects its snout in the foreground of this photo taken at Watson Lake airfield on the route to Alaska. The smooth field was cut from dense forest, 400 miles from civilization.

W. I. B. photo

CF-CPA
CANADIAN PACIFIC AIRLINES

Above:—CPA plane on northern lake bringing supplies to prospectors.



Top left:—Twin-engine high speed Canadian Pacific airliner in winter flight over northern prairie country

Bottom left:—This Canadian Pacific airliner is a long way from home at Saglek Fiord on the north coast of Labrador.

Right:—Northern lakes make natural landing fields for float-equipped planes.

W. I. B. photo

Yellowknife, N. W. T., looking to the north

Eldorado Mine, Lebine Point, Great Bear Lake, N. W. T.

Aklavik, looking south

R. C. A. F. photos

Winging northward.
W. I. B. photo

and pipelines have marched forward together in the North Country, while existing rail facilities have been expanded and new major routes surveyed, and water highway facilities enlarged to meet peak traffic loads.

It is also doubtful if any region in the English-speaking world has been so highly publicized in the press as Northern Canada during the past few years. It has been a virtual mecca for news-covering correspondents. Highlighted by the Alaska Highway and joint defence airfield chain, together with the strategic position of Alaska in connection with continental defence, the whole area has been blazoned in public print to the point where it is perhaps one of the most generally known, though not specifically analyzed, sections of the Western Hemisphere.

It is also a fact that the development of a vast airfield network has considerably altered the technique of northern flying. The single-engine bush planes of a decade ago, geared as they were to skis or floats according to winter and summer weather conditions, have largely disappeared except to off-line points.

In the old days approximately three months of the year were lost in actual flying time due to freeze-up and break-up periods. To-day twin-engined high speed aeroplanes on wheels and flying on regular airline procedure and scheduled operations

Army transports fuelling up in Canada's Northwest.
W. I. B. photo

Centre row, top to bottom:—Take-off from northern Alberta lake of a CPA twin-engine float-equipped plane

Canadian Pacific airliner heading north fro Edmonton above the clouds.

Canadian Pacific airliner leaving Montreal fo Quebec and north shore points down the St Lawrence.

At left, top to bottom:—

Flying freight taking off from Edmonton to far northern points. In 1942 CPA planes carried approximately ten million pounds of air cargo along Canada's northern defence routes.

A horse weighing 1,700 pounds, which will be used to haul the ore cars and do other work around the cobalt mine at Werner Lake, Ontario, is loaded into CPA's "Flying Boxcar".

Canoe being loaded into United States Army plane servicing the "Canol" oil project at Norman Wells.

W. I. B. photo

At right, top to bottom:—Air transport brings men and supplies to the remote interior of Canada's rich but relatively undeveloped Northland. CPA's large air freighter, which has figured in almost every big air-freighting contract into the Canadian North, is shown loaded with mill supplies at Kenora, Ontario, for despatch to Northern Ontario points.

Giant transport plane of the United States Army disgorging supplies at Norman Wells for "Canol" oil project. W. I. B. photo

When you are in a Link Trainer you are really on your own and it is blind flying at its best. Photo shows Link Trainer at No. 2 Air Observer School at Edmonton, operated by CPA.

Girl members of "ground crew" servicing R. C. A. F. Avro-Anson at No. 8 Air Observer School, Ancienne Lorette, Quebec, operated by CPA.

Female employees checking instrument panel of R. C. A. F. training plane used at No. 9 Air Observer School of CPA at St. Johns, Quebec.

First Wings Parade held at CPA civilian-conducted training school at Ancienne Lorette, Quebec.

provide an all-year service on the basis comparable to the inter-city runs between major cities.

Airfields, the equal of those to be found in the great cities of Canada and the United States, are spotted throughout the broad expanse of the North. Navigational and weather facilities of the latest design are at the disposal of the military and commercial flyers. The extensive civilian ground facilities provided by Canada's air services branch of the Department of Transport will likewise be most important in connection with post-war global flying over the northern areas.

Air cargo has had its greatest growth in the North, and unlike smaller express types of traffic handled on the inter-city air routes the northern freight traffic even includes huge boilers, compressors, parts of steam shovels, and many supply items so urgently required to erect a vast continental defence system.

The impact of global war conditions on the northern pioneer economy has naturally brought about important economic and social changes. The former relatively low standards of wage payments have been largely replaced by the union scales of a continental industrial structure. Housing facilities have been vastly transformed from the rustic and generally improvised dwellings of the Old North to the prefabricated structures of the war period. Already progress is being made on town planning and the typical physical facilities of modern North American towns and cities are planned for major northern points. The overnight transition from the pre-war pioneer stage to the present highly complicated business practices has carried the North in a few short years into a whole new era of thought and progress.

Already governmental appreciation is being shown of the problems which have naturally arisen due to war conditions, and which are international in scope, and must be given serious consideration when peace returns. There has been formed the North Pacific Planning Project, an international research body which has been delegated to make an extensive study of the resources and problems of northern regions, with particular emphasis on the plans which should be devised to meet post-war problems in these areas. Officers connected with this organization are already deep in their research studies, and it is most interesting to note the complete co-operation between United States and Canadian officials as plans are made to develop post-war policies on a common basis to meet the requirements alike of both Alaska and

Bottom right:—Canada's long-experienced northern civilian pilots now play a vital war role in teaching students of the British Commonwealth Air Training Plan. Photo shows civilian pilot going over flight map with student crew at No. 2 Air Observer School at Edmonton, operated by CPA.

Below:—Rich cargo of white fox furs from the rim of the Arctic.

Northern Canada. It is obvious that the present development has largely been of an international character, and likewise the issues to be faced after the war will have equal meaning to the citizens of both Canada and the United States.

Further information on the vast mineral and natural resources in the country will likely be forthcoming after the war as a result of the aerial inventory which Ottawa proposes making of Canada's natural resources as a post-war project. Not only would this provide governmental authorities with basic information but it would also be a means of re-employment for many R.C.A.F. trained personnel and provide equipment use in the period following the war.

Northern Canada is not at the top of the world as much as it is in the middle of the world—in an air sense. On the basis of the Azimuthal projection practically all great Circle routes between North America and Europe and Asia cross the Polar regions. Canada thus holds the key to future global routes and to-day military necessity has both developed the ground facilities and the aerial experience covering the northwestern route by Edmonton and to Alaska and a northeastern route from Montreal through Labrador. The middle northern mid-continental route through Winnipeg is not yet in operation but is considered feasible by airline operators.

The total area of the Northwest Territories and the Yukon amounts to slightly more than 1,500,000 square miles, or approximately two-fifths of the total area of the Dominion. The extent to which

Top:—Transport planes at Watson Lake airfield on the route to Alaska

W. I. B. photo

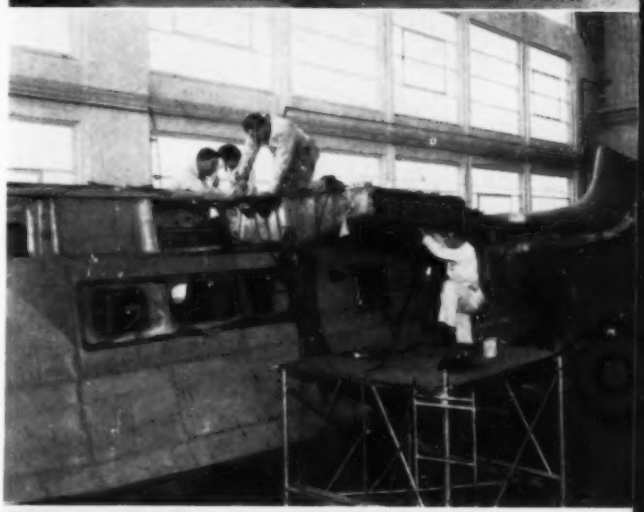
Centre:—C. H. Dickins, O.B.E., D.F.C., Vice-President and General Manager of CPA in cockpit of Lockheed recently acquired for servicing defence projects in Northern Canada. This high speed modern airliner is a far cry from the bush planes operated by "Punch" Dickins in his early flying days in opening up the North.

Air Commodore H. Hollick-Kenyon (left) famed northern and Antarctic pilot now supervisor of pilot training of CPA at Edmonton

population and industrial development will be expanded depends largely on national policies and the degree to which immigration and trade expansion takes place in these regions and the Yukon. It is also expected that mineral and natural resources development will take place in the North after the war as a part of a national reconstruction plan which will create new opportunities for air freighting work.

It is equally true that there should be a fairly considerable tourist traffic development in these northern regions particularly with relation to big game hunting and fishing. The North Pacific area of this continent would seem to be one of the areas peculiarly suitable for the development of tourist air traffic due to the great distances involved, the comparatively large population centres removed from the North by only a few hours' flying time, and the lack of other adequate means of surface transport.

A new chapter in the never ending story of Canadian transportation is being written by the aeroplane in its sensational development of Northern Canada. To-day these routes carry war traffic but to-morrow they will undoubtedly be links in a global air chain. In this connection it appears certain that few countries have more to gain than Canada in the vast changes which will materialize in the coming air age.



Top to bottom:—

Northern lakes — fishermen's paradise

W. I. B. photo

Photo shows R. C. A. F. Cessna training planes in various stages of assembly after overhaul at repair plant in Moose Jaw, operated by CPA for repair and overhaul of R. C. A. F. equipment.

Workers in CPA aircraft repair plant at New Westminster, British Columbia, repairing R. C. A.F. flying boat.

A welcome army of invasion was the great force of United States soldiers which cut the Alaska Highway through Canada's wilderness to Alaska. Through bushland, across muskeg and rivers, a vital artery in North America's network of defence is feeding weapons and supplies to the North. Photo shows typical engineers' camp seen from the mountain section of the highway.

W. I. B. photo

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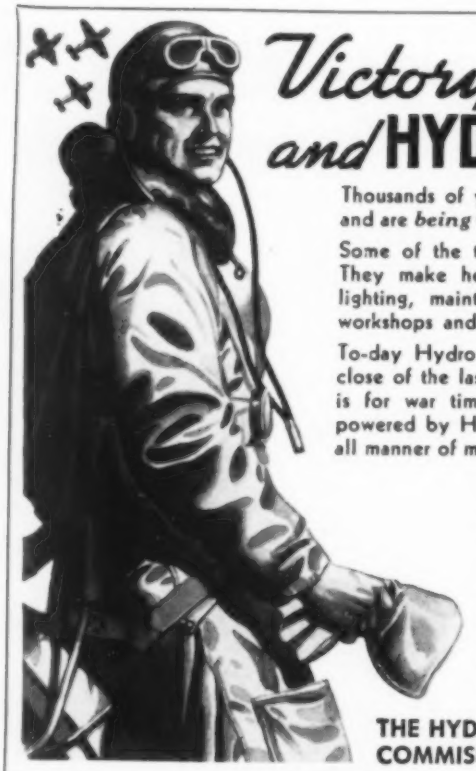

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EDITOR'S NOTE-BOOK

L. M. McKechnie, author of "'Home War': The R.C.A.F. Guards our Shores", is a veteran Toronto newspaperman on loan from *The Toronto Evening Telegram* to the R.C.A.F., which he serves as Assistant Director of Public Relations. Flying Officer N. A. Folland, who collaborated with Mr. McKechnie in the writing of this article, is R.C.A.F. Public Relations Officer in Eastern Air Command, and, like Mr. McKechnie, is a former member of the Ontario Legislature Press Gallery. When he enlisted he was on the staff of *The Toronto Daily Star*. Flying Officer S. P. Cromie, second collaborator, is familiar by personal contact with the Western Air Command; news editor on the Public Relations staff at R.C.A.F. Headquarters, he was formerly a member of the staff of *The Vancouver Sun*, of which newspaper he is a director.

Robert J. Hastings, born of British parents in Formosa, is a member of the staff of the Dominion Plant Pathological Laboratory, Division of Botany and Plant Pathology, Science Service, Dominion Department of Agriculture, at Saanichton, B.C. Mr. Hastings graduated from the Ontario Agricultural College in 1921. For a number of years he was Plant Disease Investigator with the Dominion Department of Agriculture, and now holds the position of Senior Agricultural Assistant at Saanichton. A recognized authority on the diseases of bulbs in British Columbia, Mr. Hastings conducts research on bacterial and fungus diseases and is responsible for the inspection of commercial bulbs in greenhouses and in the field, and for the examination of imported bulbs.

D. B. Wallace, author of "Canada's Northern Air Routes", is a native of Halifax, N.S.; he attended Acadia University, Wolfville, and graduated in 1934 from the University of Toronto with a Master of Arts degree in Economics and Transportation. After two years on the Editorial staff of *The Financial Post* in Toronto, Mr. Wallace joined the Canadian Pacific Railway in Montreal where he was engaged in research studies. In this capacity he toured Canada as an observer for the company with the Royal Commission on Dominion-Provincial Relations. With the pioneering of the Atlantic Ferry Bomber Service by the Canadian Pacific, Mr. Wallace acted as administration manager until this organization was taken over by the R.A.F., and to-day is Assistant to the Vice-President and General Manager of Canadian Pacific Air Lines in Montreal.

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Shakespeare: "As You Like It" Act V. Sc. IV.

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AMONGST NEW BOOKS

Land, Air, and Ocean by R. P. BECKINSALE, M.A. Duckworth, London.....15/s.

In recent years there have been many excellent books published on the subjects of Physical Geography and Physiography, most of which are more or less in the class of text books. The present volume by Dr. Beckinsale is directed more to the attention of the layman reader and carries nothing of that intangible flavour of the classroom. It is admirably written and arranged, and conveys, in non-technical language, an excellent picture of the world we live in. Dr. Beckinsale has a happy approach to the minds of his readers and is able, in the simplest terms, to explain the nature and movements of the atmosphere above us, the currents and deeps of the sea, and the origin of the multiplicity of land forms which so largely condition our way of life.

Unfortunately, the examples given and discussed are nearly all in Great Britain and Europe, and, consequently, the Canadian reader will not always find it easy to correlate them with his own country. There would seem to be a field for some aspiring Canadian geographer to produce a book along similar lines, using for illustration the wide variety of Canadian topographic forms.

Many of the diagrams, though effective, are roughly, even carelessly drawn, and a little more attention to these details would have greatly enhanced the appearance of the book. There is a good index and brief bibliography at the end of each chapter.

P. E. P.

Between the Thunder and the Sun by VINCENT SHEEAN. The MacMillan Co., Toronto....$4.00.

During these last few troubled years when our world has been distracted by the clash of ideologies and we have seen one tyranny after another rise and flourish, there have been men from many different classes and countries who have stood four square for human freedom and human dignity and have earned the right to be named "Men of Goodwill". Some of them have disappeared into prison camps, or faced the firing squad, while others are the leaders of thought and effort in the great struggle in which we are now engaged. In this good company Mr. Vincent Sheean has earned an honourable place. His pen and tongue have always been on the side of the disinherited and oppressed, and he had the gift to see and to foretell the pattern of these dark days through which we are now passing. Always lined with the left he has been the slave of no narrow ideology but has held himself free to honour good men of every shade of politics or to condemn alike the Russo-German pact of 1939 and the ineptitude of the great democracies—France, Britain, and the United States in their abandonment of Spain and the final shame of Munich.

Mr. Sheean's current book, *Between the Thunder and the Sun* is, in a way, a continuation of his *Personal History*. It commences with the Mozart Festival in Salzburg in 1937 where international

(Continued on page XIII)

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(Continued from page XII)

society gathered to hear Toscanini interpret great music. It takes the reader to the Cote d'Or at Cannes where the same gay company swam and danced and made love in the last summers of peace, heedless of the tragedy which was even then being enacted on the brown hills of the Ebro, only a few miles away, where the last armies of republican Spain went down before Franco and his German and Italian collaborators. Then the war and months in Paris when the war in the West was a "phony" war, in the niggling phrase of Mr. Borah of the United States Senate, and so till May, 1940, when the war was no longer phony and the columns of Hitler crashed through defences thought to be impregnable and found a divided and impotent France supine at their feet. In those days we had the amazing spectacle of soldiers of France taking their orders from the aging mistress of the Premier, the grotesque figure of Pierre Laval, busy in the background like some obscene incarnation of the spirit of treachery, and the senile Petain commencing to mould with his trembling hands a satellite state founded on authority and obedience. We know now whose was the authority and to whom the obedience.

In England Mr. Sheean saw the aftermath of Dunkirk and the battle of Britain when he watched, from the cliffs of Dover, the German squadrons come over day after day and, with prophetic vision, saw the first faint gleam of victory in the flash of a Spitfire's wing over the mists of the Channel. In the past no lover of a Britain that was lead, or rather not lead, by Baldwin and Chamberlain, he recognized in Mr. Churchill the authentic voice of freedom, speaking the language and the very tones of Shakespeare and uniting Englishmen of all ranks and classes in a stubborn defiance that has paved the way to an ultimate victory.

Back in the United States, Mr. Sheean lectured to audiences who could not recognize that this war was their war and that eventually they must align themselves with Britain, a decision which was taken out of their hands in the thunder of Sunday morning at Pearl Harbour. In the meantime, Mr. Sheean returned to England, had a cruise in a destroyer on convoy duty, saw the terrible bombings of London and Liverpool in May, 1941, and finally went to the Orient. There he saw Singapore and Hong Kong, swollen and plethoric with trade, whose rulers had no realization of the fact that the sword of the Samurai was even then raised over their heads, Chungking — where he was more impressed with the stubborn war of the peasant and guerrilla against Japan, than with the efforts or leadership of the Chinese Government, Manila—happily unconscious of her coming tragedy, and so back to America, to arrive only a few days before Japan made her contemptuous attack.

Our shelves nowadays are overburdened with books by correspondents, each one incredibly wise and prescient after the event and each posing as a self-appointed judge of better men who have done the fighting or carried the burden of responsibility. This is not that sort of book. Mr. Sheean's long

(Continued on page XV)

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Before the war, Fleet Aircraft, Limited supplied hundreds of trainers to the R.C.A.F., Canadian light aeroplane clubs and numerous foreign countries; since the beginning of the present war the Company has produced many hundreds more for the British Commonwealth Air Training Plan. All its facilities are now devoted to manufacturing the Fleet "Cornell" and the P.T. 26A—the standard primary trainers adopted by the Combined Training Organization of the United Nations.

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On October 21, 1942, eight men in a Flying Fortress braced themselves for a forced landing on the Pacific. The captain skillfully brought the plane down in the valley between two mountainous swells. Three rubber rafts were inflated and the men scrambled into them as the plane settled. Six minutes later, the plane disappeared and the men were alone in the broad Pacific. Thus began an ordeal of drifting; burned with sun and salt water, starved and parched with frightful thirst; that ended with a miraculous rescue 21 long days later. It is the now epic adventure of the Rickenbacker Pacific Mission. One by one all of the watches in the party, except one, stopped running as salt water corrosion attacked the movements. No watches are built for the punishment these watches suffered. But we are proud that the one that kept on running was a Longines.

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(*Continued from page XIII*)

background of observation, study, and thought, have taught him humility and he brings to the reader, over and above his racy account of events as he saw them, his deep passion for freedom and for humanity. This passion has since led him away from his place as a bystander and observer to an active participation in the war and he is now on active service with the American Air Force.

P. E. P.

Mirror for Americans — Likeness of the Eastern Seaboard, 1810 by RALPH H. BROWN. American Geographical Society, New York, 1943.....$4.00.

In writing this book Professor Brown has used an artifice by no means new to the writers of fiction, but probably never before resorted to by a geographer. He has invented an author—one Thomas Pownall Keystone, a cultivated gentleman of middle age, residing in Philadelphia. Mr. Keystone has always been interested in American Geography and has accumulated an extensive library on the subject and, in 1810, he takes up his pen to summarize the information available at that time. Professor Brown has been remarkably successful in "ghost writing" for this hypothetical character. One has the feeling that he is so thoroughly familiar with the literature of the period and with the subject that he has no difficulty in actually assuming the somewhat reserved and didactic character of Mr. Keystone. His style never varies from that of the period, and he has happily been able to avoid any indication of more recent information and has never let Mr. Keystone get out of hand and prophesy developments that have since taken place. The result is a thoroughly readable and instructive book which covers the American seaboard, its topography, agriculture, industries, trade and inhabitants as they then were and constitutes a valuable addition to the literature of geography.

It would appear that Mr. Keystone has slipped in placing (page 6) the source of the Mississippi in Lake of the Woods. David Thompson, the great explorer-surveyor had, in 1798, located the source of that river in approximately its true position and even at that early day the Lake of the Woods and its connecting waterways were an important fur trade route and were well known.

The book is handsomely illustrated with maps, plates and prints of the period and has a bibliography (1810 and earlier), an exhaustive index and copious notes. It is beautifully designed and printed and, throughout, is characteristic of the excellent publications we have learned to expect from the American Geographical Society.

Canadians may be interested in knowing that there is available a somewhat similar book of equal excellence, covering the settled areas of Canada and published only a few years later. This is *The British Dominions in North America* by Colonel Joseph Bouchette, Surveyor General of Lower Canada, and published by Longman's in London in 1832. Rather than being a compilation from other writers, it is largely the result of personal observation by the author and is illustrated with original drawings of great excellence, and a map that even to-day can be cited as an outstanding example of cartography. This book is a mine of information on the Canada of that day and a worthy memorial to a great surveyor and geographer.

P. E. P.